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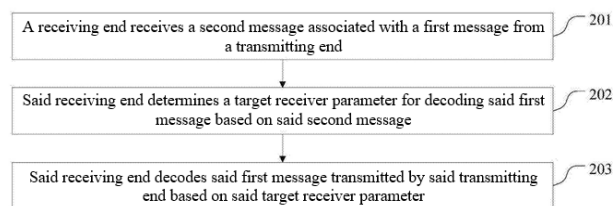
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(54) Title of invention

MESSAGE-DECODING METHOD,
TRANSMITTING END, AND RECEIVING
END

(57) Abstract

The present invention provides a message-decoding method, transmitting end, and receiving end, and the method may comprise: a receiving end receiving a second message associated with a first message from a transmitting end; said receiving end determining, based on said second message, a target receiver parameter for decoding said first message; and said receiving end decoding said first message transmitted by said transmitting end based on said target receiver parameter. Thus, embodiments of the present invention enable a receiving end to determine a receiver parameter based on a second message associated with a first message and can also improve message transmission performance.



1. A message-decoding method, characterized in that it comprises:
a receiving end receiving a second message associated with a first message from a transmitting end;
said receiving end determining, based on said second message, a target receiver parameter for decoding said first message; and
said receiving end decoding said first message transmitted by said transmitting end based on said target receiver parameter.
2. The method as described in claim 1, characterized in that, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and
if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.
3. The method as described in claim 2, characterized in that the default receiver parameter of said receiving end comprises:
a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.
4. The method as described in claim 2, characterized in that said parameter indication information explicitly or implicitly indicates said target receiver parameter.
5. The method as described in claim 4, characterized in that, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.
6. The method as described in any one of claims 1 through 5, characterized in that, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and
if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.
7. The method as described in claim 6, characterized in that the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or
the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.
8. The method as described in any one of claims 1 through 5, characterized in that said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end decoding said first message based on said target receiver parameter comprises:
if said second message comprises parameter indication information, then said receiving end decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or
if said second message comprises parameter indication information, then said receiving end discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or
if said second message comprises parameter indication information, then said receiving end decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or
if said second message does not comprise beam indication information, then said receiving end decodes said first part content and said second part content based on the default receiver parameter; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change, then said receiving end decodes said first part content and said second part content based on the default receiver parameter.

9. The method as described in any one of claims 1 through 5, characterized in that said method further comprises:

said receiving end receiving a third message from said transmitting end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

10. The method as described in claim 9, characterized in that said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

11. The method as described in any one of claims 1 through 5, characterized in that said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

12. The method as described in claim 11, characterized in that a receiver parameter in said space domain comprises a reception beam for said receiving end.

13. A message-decoding method, characterized in that it comprises:
a transmitting end transmitting a second message associated with a first message to a receiving end, wherein said second message is used by said receiving end to determine a target receiver parameter for decoding said first message; and

said transmitting end transmitting said first message to said receiving end.

14. The method as described in claim 13, characterized in that, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

15. The method as described in claim 14, characterized in that the default receiver parameter of said receiving end comprises:

a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

16. The method as described in claim 14, characterized in that said parameter indication information explicitly or implicitly indicates said target receiver parameter.

17. The method as described in claim 16, characterized in that, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information

comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

18. The method as described in any one of claims 13 through 17, characterized in that, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

19. The method as described in claim 18, characterized in that the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

20. The method as described in any one of claims 13 through 17, characterized in that said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

21. The method as described in any one of claims 13 through 17, characterized in that it further comprises:

said transmitting end transmitting a third message to said receiving end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

22. The method as described in claim 21, characterized in that said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

23. The method as described in any one of claims 13 through 17, characterized in that said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

24. The method as described in claim 23, characterized in that a receiver parameter in said space domain comprises a reception beam for said receiving end.

25. A receiving end, characterized in that it comprises:

a first receiving module, which is for receiving a second message associated with a first message from a transmitting end;

a determining module, which is for determining, based on said second message, a target receiver parameter for decoding said first message; and

a decoding module, which is for decoding said first message transmitted by said transmitting end based on said target receiver parameter.

26. The receiving end as described in claim 25, characterized in that, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

27. The receiving end as described in claim 25 or 26, characterized in that, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

28. The receiving end as described in claim 25 or 26, characterized in that said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content:

said decoding module is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message does not comprise beam indication information; or

said decoding module is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change.

29. The receiving end as described in claim 25 or 26, characterized in that said receiving end further comprises:

a second receiving module, which is for receiving a third message from said transmitting end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

30. A transmitting end, characterized in that it comprises:

a first transmitting module, which is used by the transmitting end for transmitting a second message associated with a first message to a receiving end, wherein said second message is used by said receiving end to determine a target receiver parameter for decoding said first message; and

a second transmitting module, which is for transmitting said first message to said receiving end.

31. The transmitting end as described in claim 30, characterized in that, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

32. The transmitting end as described in claim 30 or 31, characterized in that, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

33. The transmitting end as described in 30 or 31, characterized in that said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

34. The transmitting end as described in 30 or 31, characterized in that said transmitting end further comprises:

a second transmitting module, which is for transmitting a third message to said receiving end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

MESSAGE-DECODING METHOD, TRANSMITTING END, AND RECEIVING END**Field of the Invention**

[0001] The present invention relates to the field of communications technology and in particular relates to a message-decoding method, a transmitting end, and a receiving end.

Background of the Invention

[0002] With the development of communications technology, all communications devices now support multiple antenna systems, e.g., support as many as 128, 256, or 512 antenna units and as many as 128, 256, or 512 transceiver units, wherein each antenna unit connects to one transceiver unit. Moreover, current communications devices also support multiple wave beams, and the coverages of different wave beams may vary. Thus, when a transmitting end (e.g., a network-side device) is transmitting information, it may select the appropriate transmitter parameter from among multiple transmitter parameters (e.g., transmission beam) for performing transmission and thereby improve communication performance. As for how a receiving end (e.g., a user terminal) selects the appropriate receiver parameter (e.g., reception beam) to decode a message transmitted by the transmitting end is still unclear at present. It is thus obvious that the question of how a receiving end selects an appropriate receiver parameter to decode a message transmitted by a transmitting end is a technical problem that currently is urgently in need of a solution.

Summary of the Invention

[0003] The object of the present invention is to provide a message-decoding method, a transmitting end, and a receiving end so as to solve the problem of how a receiving end selects an appropriate receiver parameter to decode a message transmitted by a transmitting end.

[0004] To attain the object described above, embodiments of the present invention provide a message-decoding method, comprising:

[0005] a receiving end receiving a second message associated with a first message from a transmitting end;

[0006] said receiving end determining, based on said second message, a target receiver parameter for decoding said first message; and

[0007] said receiving end decoding said first message transmitted by said transmitting end based on said target receiver parameter.

[0008] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

[0009] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0010] Optionally, the default receiver parameter of said receiving end comprises:

[0011] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0012] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

[0013] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0014] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0015] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication

information, and no gap exists between said second message and said first message.

[0016] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0017] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

[0018] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end decoding said first message based on said target receiver parameter comprises:

[0019] if said second message comprises parameter indication information, then said receiving end decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0020] if said second message comprises parameter indication information, then said receiving end discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0021] if said second message comprises parameter indication information, then said receiving end decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0022] if said second message does not comprise beam indication information, then said receiving end decodes said first part content and said second part content based on the default receiver parameter; or

[0023] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0024] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0025] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0026] if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change, then said receiving end decodes said first part content and said second part content based on the default receiver parameter.

[0027] Said method further comprises:

[0028] said receiving end receiving a third message from said transmitting end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

[0029] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0030] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0031] Optionally, a receiver parameter in said space domain comprises a reception beam for said receiving end.

[0032] Embodiments of the present invention further provide a message-decoding method, comprising:

- [0033] a transmitting end transmitting a second message associated with a first message to a receiving end, wherein said second message is used by said receiving end to determine a target receiver parameter for decoding said first message; and
- [0034] said transmitting end transmitting said first message to said receiving end.
- [0035] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and
- [0036] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.
- [0037] Optionally, the default receiver parameter of said receiving end comprises:
- [0038] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.
- [0039] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.
- [0040] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.
- [0041] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and
- [0042] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.
- [0043] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or
- [0044] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.
- [0045] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.
- [0046] Optionally, said method further comprises:
- [0047] said transmitting end transmitting a third message to said receiving end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.
- [0048] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.
- [0049] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.
- [0050] Optionally, a receiver parameter in said space domain comprises a reception beam for said receiving end.
- [0051] Embodiments of the present invention further provide a receiving end, comprising:
- [0052] a first receiving module, which is for receiving a second message associated with a first message from a transmitting end;
- [0053] a determining module, which is for determining, based on said second message, a target receiver parameter for decoding said first message; and
- [0054] a decoding module, which is for decoding said first message transmitted by said transmitting end

based on said target receiver parameter.

[0055] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

[0056] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0057] Optionally, the default receiver parameter of said receiving end comprises:

[0058] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0059] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

[0060] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0061] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0062] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

[0063] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0064] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

[0065] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content;

[0066] said decoding module is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

[0067] said decoding module is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

[0068] said decoding module is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

[0069] said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message does not comprise beam indication information; or

[0070] said decoding module is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

[0071] said decoding module is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises

parameter indication information; or

[0072] said decoding module is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

[0073] said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change.

[0074] Optionally, said receiving end further comprises:

[0075] a second receiving module, which is for receiving a third message from said transmitting end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

[0076] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0077] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0078] Optionally, a receiver parameter in said space domain comprises a reception beam for said receiving end.

[0079] Embodiments of the present invention further provide a transmitting end, comprising:

[0080] a first transmitting module, which is used by the transmitting end for transmitting a second message associated with a first message to a receiving end, wherein said second message is used by said receiving end to determine a target receiver parameter for decoding said first message; and

[0081] a second transmitting module, which is for transmitting said first message to said receiving end.

[0082] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

[0083] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0084] Optionally, the default receiver parameter of said receiving end comprises:

[0085] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0086] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

[0087] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0088] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0089] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

[0090] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0091] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and

said receiving end is notified thereof.

[0092] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

[0093] Optionally, said transmitting end further comprises:

[0094] a second transmitting module, which is for transmitting a third message to said receiving end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

[0095] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0096] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0097] Optionally, a receiver parameter in said space domain comprises a reception beam for said receiving end.

[0098] The present invention further provides a receiving end, characterized in that it comprises a processor, a transceiver, memory, a user interface, and a bus interface, wherein:

[0099] said processor is for reading programs in said memory and executing the steps in the message-decoding method corresponding to the receiving end side as provided by embodiments of the present invention.

[0100] The present invention further provides a transmitting end, characterized in that it comprises a processor, a transceiver, memory, a user interface, and a bus interface, wherein:

[0101] said processor is for reading programs in said memory and executing the steps in the message-decoding method corresponding to the transmission side as provided by embodiments of the present invention.

[0102] The above-described technical scheme of the present invention has at least the following beneficial effects:

[0103] In an embodiment of the present invention, a receiving end receives a second message associated with a first message from a transmitting end; said receiving end determines, based on said second message, a target receiver parameter for decoding said first message; and said receiving end decodes said first message transmitted by said transmitting end based on said target receiver parameter. Thus, it is possible for a receiving end to determine a receiver parameter based on a second message associated with a first message and also to improve message transmission performance.

Explanation of the Drawings

[0104] FIG. 1 is a diagram of an applicable network architecture of an embodiment of the present invention.

[0105] FIG. 2 is a flowchart of a message-decoding method provided by an embodiment of the present invention.

[0106] FIG. 3 is a diagram of a message transmission provided by an embodiment of the present invention.

[0107] FIG. 4 is a diagram of another message transmission provided by an embodiment of the present invention.

[0108] FIG. 5 is a diagram of another message transmission provided by an embodiment of the present invention.

[0109] FIG. 6 is a diagram of another message transmission provided by an embodiment of the present invention.

[0110] FIG. 7 is a flowchart of another message-decoding method provided by an embodiment of the present invention.

[0111] FIG. 8 is a structural diagram of a receiving end provided by an embodiment of the present invention.

[0112] FIG. 9 is a structural diagram of another receiving end provided by an embodiment of the present invention.

[0113] FIG. 10 is a structural diagram of a transmitting end provided by an embodiment of the present invention.

[0114] FIG. 11 is a structural diagram of another transmitting end provided by an embodiment of the present invention.

[0115] FIG. 12 is a structural diagram of another receiving end provided by an embodiment of the present invention.

[0116] FIG. 13 is a structural diagram of another transmitting end provided by an embodiment of the present invention.

Specific Embodiments

[0117] To further clarify the technical problem that the present invention will solve, in addition to its technical solutions and advantages, a detailed description is provided below in light of the drawings and specific embodiments.

[0118] Refer to FIG. 1, which is a diagram of an applicable network architecture of an embodiment of the present invention; as shown in FIG. 1, it comprises a transmitting end 11 and a receiving end 12, wherein the transmitting end 11 may be base station or a terminal, and the receiving end 12 may also be a terminal or a base station, e.g., the transmitting end 11 is a base station, and the receiving end 12 is a terminal, in which case communications between the terminal and the base station may be realized; or the transmitting end 11 is a terminal, and the receiving end 12 is a base station, in which case communications between the terminal and the base station may be realized; or the transmitting end 11 is a base station, and the receiving end 12 is also a base station, in which case base station-to-base station communications may be realized; or the transmitting end 11 is a terminal, and the receiving end 12 is also a terminal, in which case terminal-to-terminal communications may be realized. Of course, in embodiments of the present invention, the transmitting end 11 is not limited to a terminal or a base station, e.g., the transmitting end 11 may also be another network-side device; likewise, the receiving end 12 is not limited to a terminal or a base station, e.g., the receiving end 12 may also be another network-side device; the embodiments of the present invention impose no restrictions with regard to these matters. FIG. 1 provides an exemplary illustration in which the transmitting end 11 is a base station, and the receiving end 12 is a terminal. The terminal may be a user terminal (or user equipment, UE), e.g., a terminal-side device such as a mobile telephone, a tablet computer, a laptop computer, a personal digital assistant (PDA), a mobile Internet device (MID), or a wearable device; it should be stated that embodiments of the present invention are not limited to specific types of terminals. The base station may be a macrocell, such as LTE, eNB, and 5G NR/NB, or it may be a small cell, such as a low power node (LPN), pico, or femto; or it may be an access point (AP); the base station may also be a network node composed of a central unit (CU) and multiple transmission reception points (TRPs) controlled by the CU. In addition, there are one or more cells (e.g., split into different frequency points or sectors) under one base station. It should be stated that, in embodiments of the present invention, the specific types of base stations are not limited.

[0119] Please refer to FIG. 2, which is a flowchart of a message-decoding method provided by an embodiment of the present invention; as shown in FIG. 2, it includes the steps below:

[0120] 201: a receiving end receiving a second message associated with a first message from a transmitting end;

[0121] 202: said receiving end determining, based on said second message, a target receiver parameter for decoding said first message; and

[0122] 203: said receiving end decoding said first message transmitted by said transmitting end based on said target receiver parameter.

[0123] Therein, said first message may be a signal, e.g., a data and/or control message, that the transmitting end needs to transmit to the receiving end; for example, said first message may be a downlink signal. In addition, in an embodiment of the present invention, the first message may be defined as msg1. And said second message may be understood as a message for notifying the receiving end of a receiver reference, e.g., a control message or a scheduling message; in addition, the second message in an embodiment of the present invention may be defined as msg2.

[0124] “Determining, based on said second message, a target receiver parameter for decoding said first message,” as stated above, may be as follows: if said second message includes parameter indication information, then determining that a receiver parameter indicated by the parameter indication information serves as said target device parameter; and if said second message does not include parameter indication information, then determining that the default receiver parameter information serves as said target device parameter. That is, in embodiments of the present invention, two situations may exist concerning said second message: one is that it contains parameter indication information, in which case the receiving end may need to switch the receiver parameter and then decode the message transmitted by the transmitting end. Another

is that it does not contain parameter indication information, in which case the receiving end may directly decode the message transmitted by the receiving end without having to switch the beam receiver parameter. In addition, the target receiver parameter may be a relevant parameter of a receiver in the receiving end, e.g., at least one of parameters such as reception beam, equalizer, and reception filter, concerning which the present invention imposes no restrictions. To take a target reception beam as an example of a target receiver parameter, determining the target reception beam for decoding said first message, as described above, may be as follows: selecting one or more reception beams from among a plurality of reception beams (Rx beams) of the receiving end. Moreover, a plurality of receiver parameters of the receiving end may be unrelated to the transmitting end, or a plurality of receiver parameters of the receiving end may be already known to the transmitting end, e.g., through pre-configuration or a feedback notification to the transmitting end, concerning which embodiments of the present invention impose no restriction.

[0125] In embodiments of the present invention, it is possible, through the steps described above, to notify a receiving end, via a specialized second message, of the reception beam for a first message transmitted by a transmitting end, thus causing the receiving end and the transmitting end to obtain more accurate beam combination information, to support multi-beam transmission, and to improve beam transmission performance. In addition, embodiments of the present invention may be used for analogue beam switching for the receiving end in a wireless communication system, or it may be used for digital beam switching for the receiving end; embodiments of the present invention impose no restrictions concerning the above.

[0126] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

[0127] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0128] In this implementation, said second message may include or not include the parameter indication information; if it does include it, then the receiver parameter indicated by the parameter indication information serves as said target receiver parameter. Therein, a reception beam indicated by the parameter indication information may be a receiver parameter different from the receiver parameter currently used by the receiving end; at this time, the receiving end needs to switch the receiver parameter. It is not necessary to switch if the default receiver parameter is used; for example, the default receiver parameter may be the receiver parameter currently used by the receiving end for rapid decoding of the message transmitted by the transmitting end. In addition, in embodiments of the present invention, the parameter indication information in the second message may be a parameter indication field in the second message, i.e., the second message may have or not have this parameter indication field.

[0129] For example, the default receiver parameter of said receiving end includes:

[0130] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0131] In this implementation, it is possible, through said default beam, to reduce receiver parameter switching, e.g., reduce reception beam switching, so as to improve transmission performance, e.g., possibly no gap exists between the second message and the first message.

[0132] In addition, in embodiments of the present invention, said parameter indication information may explicitly or implicitly indicate said target receiver parameter. For example, it explicitly or implicitly indicates said target reception beam.

[0133] Explicit indication may be understood as direct indication; to take a reception beam as an example, the receiving end has a group of L preconfigured reception beams, which may already be known to the transmitting end. Thus, said parameter indication information carries a field of $\log_2(L)$ bits so as to indicate a recommended reception beam for the receiving end. After receiving the second message, the receiving end may determine a corresponding reception beam for decoding msg1. Said implicit indication may be understood as an indirect indication; for example, said parameter indication information may indicate a transmission beam (Tx beam), and a reception beam corresponding to the transmission beam may be implicitly indicated by the indicated transmission beam. In this implementation, it is possible, in the implicit or explicit manner described above, to flexibly indicate the reception beam to the receiving end and thereby improve system flexibility.

[0134] Optionally, if said parameter indication information implicitly indicates said target receiver parameter,

then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0135] In this implementation, the receiver parameter may be implicitly indicated by the transmitter parameter; to take a target receiver parameter that is a target beam as an example, the transmitting end may have M candidate transmission beams for downlink transmission. The transmitting end configures M reference symbol (RS) resources and applies each transmission beam to a corresponding RS resource. For each RS resource, the receiving end may test one group of candidate reception beams and determine the optimal reception beam for each RS resource (e.g., transmission beam). Preferentially, the receiving end may at least provide information about recommended transmission beams as feedback, e.g., in the form of recommended RS resources, to the transmitting end, but this step is optional. Prior to transmitting the first message, the transmitting end transmits the indication of the transmission beam selected by it in the form of a second message. After the receiving end receives the second message, it obtains information about the used transmission beam and obtains the optimal reception beam to serve as the above-stated target reception beam; this optimal reception beam may be known from previous measurements and saved in the receiving end.

[0136] In this implementation, the receiver parameter may be implicitly indicated by the transmitter parameter and thus facilitate transmission between the receiving end and the transmitting end. Of course, in some implementations, the transmitting end may autonomously select a corresponding transmitter parameter, such as a transmission beam, based on recommendation information sent back by the receiving end.

[0137] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0138] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

[0139] In this implementation, the scheduling time unit corresponding to the above-stated parameter switching indication set (BSIS) may be a time unit such as a sub-frame or a slot. Moreover, the transmitting end and the receiving end may understand the BSIS in the same way. The second message may carry parameter indication information only when in the slot (using slots as an example here) corresponding to the BSIS; otherwise, the second message does not carry beam indication information. This means that in all slots other than the one corresponding to the BSIS it is not necessary to execute receiver parameter switching, e.g., reception beam switching, and that receiver parameter switching is executed only in a periodically selected slot (such as the slot in the BSIS).

[0140] In addition, because a gap exists between said second message and said first message when the second message comprises parameter indication information, the receiving end may switch the receiver parameter, e.g., switch the reception beam, during this gap and thus not affect message transmission. When said second message does not comprise parameter indication information, it is possible that no gap exists between said second message and said first message; it is thus possible to conserve transmission resources because, in this situation, the receiving end may not need to switch the receiver parameter, e.g., switch the reception beam, and then continuous transmission of the second message and the first message will not affect receiving end decoding. The above-stated second message and first message may be transmitted using the same frequency domain resource or the same channel; embodiments of the present invention impose no restrictions in this regard.

[0141] For example, a second message transmitted within a slot in the BSIS carries beam indication information. In such a situation, there is switching time between the first message and the second message in the same slot. Otherwise, for second message transmission within a slot outside of the BSIS, the transmitting end transmits the second message without carrying a beam indication field. In such a situation, the receiving end may prepare to receive the first message immediately (no gap) after the second message. For example, there is the second slot shown in FIG. 3. In addition, when it attempts to receive the second message or the first message in each slot, the receiving end may decode the second message based on the assumption that beam indication information exists or does not exist. In other words, the second message may carry parameter indication information within a slot in the BSIS, and the receiving terminal attempts to decode the second message on the assumption that there is a piece of parameter indication information. Within other slots, the

receiver decodes the second message on the assumption that there is no parameter indication information. In a slot where the second message does not carry parameter indication information, the receiver still may select one receiver parameter (e.g., reception beam) to decode the first message. The receiving end may use a receiver parameter indicated in the most recent second message carrying a parameter indication field. If no parameter indication information is received, the receiver may use a default receiver parameter to decode the first message.

[0142] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0143] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

[0144] It was stated above that the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; this may be as follows: the above-stated scheduling time unit corresponding to said parameter switching indication set is periodic; for example, the parameter switching indication set in a time domain may periodically have preconfigured periods and timing offsets, wherein the timing offset may be the offset relative to another timing reference, e.g., a frame boundary. For example, the parameter switching indication set may have a 10 ms period, which indicates that the second message transmitted in one of 10 slots may carry parameter indication information, and the second message in the other 9 slots does not carry parameter indication information. It was stated above that the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof; this may be as follows: the transmitting end configures semi-statically or semi-persistently and notifies the receiving end of a set of parameter switching indication sets, i.e., it indicates that there is a plurality of parameter switching indication sets. Or said parameter switching indication set may be obtained by the receiving end and be fed back to the transmitting end as a recommendation. The transmitting end may use the parameter switching indication set recommended by the receiving end or cover the parameter switching indication set recommended by the receiving end and select a new parameter switching indication set. The transmitting end may need to indicate to the receiving end whether to confirm the parameter switching indication set recommended by the receiving end or indicate the parameter switching indication set that it selected to the receiving end.

[0145] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end decoding said first message based on said target receiver parameter comprises:

[0146] if said second message comprises parameter indication information, then said receiving end decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0147] if said second message comprises parameter indication information, then said receiving end discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0148] if said second message comprises parameter indication information, then said receiving end decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0149] if said second message does not comprise beam indication information, then said receiving end decodes said first part content and said second part content based on the default receiver parameter.

[0150] In this implementation, the division of said first message into first part content and second part content that are consecutive in a time domain may be as follows: the receiving end divides the first message into two parts; this division may be understood as treating the first message as though it has two parts, for the receiving end has not received the first message at this point and thus cannot split it apart.

[0151] For example, the transmitting end may transmit the second message carrying relevant downlink scheduling information associated with the reception of the first message. The second message may carry or not carry parameter indication information, concerning which the receiving end may not have prior knowledge. If the second message does not have parameter indication information, the payload of the second message will be relatively small (expressed as A bits). If the second message does have parameter indication information, the payload of the second message will be relatively large (expressed as B bits, where $B > A$). After the transmitting end transmits the second message, the receiving end may attempt to blindly decode the second message. The receiving end does not have prior information concerning the payload of the second message and

therefore needs to execute blind decoding on the basis of different possible second message payloads. For example, the receiving end will execute a first blind decoding on the assumption that the second message has a payload of A bits and blindly decode another second message on the assumption that it has a payload of B bits. Thus, one of the two blind decodings will successfully decode the second message according to the actual payload of the second message. Subsequently, the receiving end may divide the first message into first part content and second part content (part 1 and part 2), wherein the first part content is located before the second part content and is time-division multiplexed (TDM) in a time domain. The first part of the first message immediately follows the second message, i.e. with no gap between them, and the second part content of the first message is adjacent to the first part content, e.g., the second slot shown in FIG. 4.

[0152] In addition, because the first part content and the second part content belong to the same message, the receiving end may execute symbol-level processing separately on the first part content and the second part content.

[0153] In this implementation, because said second message includes parameter indication information, said receiving end uses said target receiver parameter indicated by said parameter indication information to decode said second part content, wherein said transmitting end has not yet transmitted said first part content. For example, the first slot shown in FIG. 4. It is possible in this way to improve the accuracy of receiving end decoding.

[0154] In addition, when the second message includes parameter indication information, it is possible to discard said first part content and use said target receiver parameter indicated by said parameter indication information to decode said second part content. That is, it is possible to discard the first part content of the second slot shown in FIG. 4, while also being able to ensure performance between the transmitting end and the receiving end because the transmitting end in this situation may transmit non-important information in the first part content and important information in the second part content.

[0155] In addition, when the second message includes parameter indication information, the default receiver parameter may be used to decode said first part content, and said target receiver parameter indicated by said parameter indication information may be used to decode said second part content. Thus, it is possible for the receiving end to precisely decode first part and second part content.

[0156] In addition, when the second message does not include parameter indication information, the default receiver parameter may be used to decode said first part content and said second part content. That is, the third slot shown in FIG. 4.

[0157] In addition, the transmitting end and receiving end may align their precise understandings of first message decoding actions on the receiving end. This may be configured semi-statically or semi-persistently by the network for the receiving end or indicated dynamically to the receiving end using another dynamic control message.

[0158] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end decoding said first message transmitted by said transmitting end based on said target receiver parameter comprises:

[0159] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0160] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end discards said first part content and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0161] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then said receiving end decodes said first part content based on the default receiver parameter and decodes said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0162] if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change, then said receiving end decodes said first part content and said second part content based on the default receiver parameter.

[0163] In this implementation, the parameter indication field in the second message may be implemented, e.g., a beam indication field having, for example, S bits. Moreover, the parameter indication field has at least one status indication, i.e., a status indication of no parameter information or no parameter change, and may also indicate other statuses of the receiver parameter for decoding the first message. Therefore, the payload of the second message was known to the transmitting end and the receiving end in advance. For example, S = 2 corresponds to four possible receiver parameter indication statuses. One status indicates to the receiver that there is "no parameter indication information or no parameter change," and the other 3 statuses indicate the receiver parameter to the receiver.

[0164] In addition, regarding the first part content and second part content in this implementation, one may refer to the corresponding descriptions in the foregoing implementation; they will not be discussed further here.

[0165] Moreover, with regard to whether the second message includes parameter indication information and how first part content and second part content are decoded, one may refer to the corresponding descriptions in the foregoing implementation; the same beneficial efficiency may be attained without discussing them further here.

[0166] Optionally, said method further comprises:

[0167] said receiving end receiving a third message from said transmitting end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

[0168] The above-described third message may be defined as msg3; in this implementation, the third message notifies the receiving end whether the second message includes parameter indication information; more specifically, it can indicate whether the receiver parameter indicated by the second message has changed with respect to the receiving end; thus, it is possible, when there is no receiver parameter change or when no parameter indication information is included, for the receiving end to directly use the current receiver parameter to decode the first message even without having received the second message. In addition, in some implementations, the third message may have a fixed payload, wherein the presence or absence of parameter indication information in the second message corresponds to two different statuses in the third message. For example, the third message has one bit indicating whether the second message carries parameter indication information.

[0169] In addition, in an embodiment of the present invention, the above-described third message may correspond to one second message, i.e., one third message indicates one second message, as shown in FIG. 5. Moreover, the third message and the second message may be transmitted using the same scheduling time unit (e.g., a slot), an example of which is given in FIG. 5. Different scheduling time units may be used to transmit the third and second message. If the second message has parameter indication information, there may be one gap between the first message and the second message. If the second message does not have parameter indication information, there may not be a gap between the first message and the second message.

[0170] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0171] In this implementation, the third message may indicate a plurality of second messages; for example, the third message is for indicating whether M second messages in M slots include parameter indication information as a way to reduce message overhead. In addition, the value of the above-described M and the time positions of the M second messages may be configured semi-statically or semi-persistently in a predefined manner and already be known to both the transmitting end and receiving end. In the example presented in FIG. 6, M = 3. As soon as the third message is received, the third message indicates to the receiving end whether the second messages in the corresponding M slots carry parameter indication information.

[0172] In addition, the third message may be transmitted in each scheduling time unit (e.g., slots) or in

a subset of slots preconfigured by the transmitting end (e.g., it has preconfigured transmission periods and offsets). In the latter situation, the transmitting end may indicate the occurrence of the third message to the receiving end in advance.

[0173] Optionally, in an embodiment of the present invention, the target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0174] Thus, it is possible to flexibly select a receiver parameter in at least one of a time domain, a frequency domain, and a space domain based on the second message from the transmitting end and to decode the first message. Preferentially, said space domain receiver parameter includes a reception beam for said receiving end. Thus, the receiving end can determine the reception beam based on the second message associated with the first message, and beam transmission performance can be improved.

[0175] It should be stated that all of the many optional implementations introduced by embodiments of the present invention may be implemented in combination or separately; embodiments of the present invention impose no restrictions in this regard.

[0176] In an embodiment of the present invention, a receiving end receives a second message associated with a first message from a transmitting end; said receiving end determines, based on said second message, a target receiver parameter for decoding said first message; and said receiving end decodes said first message transmitted by said transmitting end based on said target receiver parameter. Thus, the receiving end can determine the receiver parameter based on the second message associated with the first message, and message transmission performance can be improved.

[0177] Refer to FIG. 7, which is a flowchart of another message-decoding method provided by an embodiment of the present invention; as shown in FIG. 7, the method comprises the steps below:

[0178] 701: a transmitting end transmitting a second message associated with a first message to a receiving end, wherein said second message is used by said receiving end to determine a target receiver parameter for decoding said first message; and

[0179] 702: said transmitting end transmitting said first message to said receiving end.

[0180] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

[0181] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0182] Optionally, the default receiver parameter of said receiving end comprises:

[0183] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0184] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

[0185] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0186] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0187] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

[0188] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0189] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

[0190] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

[0191] Optionally, said method further comprises:

[0192] said transmitting end transmitting a third message to said receiving end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

[0193] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0194] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0195] Optionally, a receiver parameter of said space domain comprises a reception beam for said receiving end.

[0196] It should be stated that the present embodiment serves as an implementation of the transmitting end corresponding to the one in the embodiment shown in FIG. 2; for its specific implementation, one may refer to the relevant explanations of the embodiment shown in FIG. 2; to avoid repetition, the present embodiment will not be discussed further, yet the same beneficial effect may be attained.

[0197] Refer to FIG. 8, which is a structural diagram of a receiving end provided by an embodiment of the present invention; as shown in FIG. 8, the receiving end 800 comprises:

[0198] a first receiving module 801, which is for receiving a second message associated with a first message from a transmitting end;

[0199] a determining module 802, which is for determining, based on said second message, a target receiver parameter for decoding said first message; and

[0200] a decoding module 803, which is for decoding said first message transmitted by said transmitting end based on said target receiver parameter.

[0201] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

[0202] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0203] Optionally, the default receiver parameter of said receiving end comprises:

[0204] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0205] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

[0206] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0207] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0208] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

[0209] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0210] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

[0211] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content:

[0212] said decoding module 803 is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

[0213] said decoding module 803 is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

[0214] said decoding module 803 is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises parameter indication information; or

[0215] said decoding module 803 is for decoding said first part content and said second part content based on the default receiver parameter if said second message does not comprise beam indication information; or

[0216] said decoding module 803 is for decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

[0217] said decoding module 803 is for discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

[0218] said decoding module 803 is for decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information; or

[0219] said decoding module is for decoding said first part content and said second part content based on the default receiver parameter if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change.

[0220] Optionally, as shown in FIG. 9, said receiving end 800 further comprises:

[0221] a second receiving module 804, which is for receiving a third message from said transmitting end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

[0222] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0223] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0224] Optionally, a receiver parameter in said space domain comprises a reception beam for said receiving end.

[0225] It should be stated that said receiving end 800 in the present embodiment may be a receiving end of any implementation among the method embodiments of the embodiments of the present invention; any implementation of the receiving end among the method embodiments of the embodiments of the present invention may be implemented by the above-described receiving end 800 in the present embodiment with the

same beneficial effects; this matter will not be discussed further here.

[0226] Refer to FIG. 10, which is a structural diagram of a transmitting end provided by an embodiment of the present invention; as shown in FIG. 10, the transmitting end 1000 comprises:

[0227] a first transmitting module 1001, which is used by the transmitting end for transmitting a second message associated with a first message to a receiving end, wherein said second message is used by said receiving end to determine a target receiver parameter for decoding said first message;

[0228] a second transmitting module 1002, which is for transmitting said first message to said receiving end.

[0229] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

[0230] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0231] Optionally, the default receiver parameter of said receiving end comprises:

[0232] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0233] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

[0234] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0235] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0236] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

[0237] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0238] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

[0239] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

[0240] Optionally, as shown in FIG. 11, said transmitting end further comprises:

[0241] a second transmitting module 1003, which is for transmitting a third message to said receiving end, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

[0242] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0243] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0244] Optionally, a receiver parameter in said space domain comprises a reception beam for said receiving end.

[0245] It should be stated that the above-described transmitting end 1000 in the present embodiment may be a transmitting end of any implementation among the method embodiments of the embodiments of the present invention;

any implementation of the transmitting end among the method embodiments of the present invention may be implemented by the above-described transmitting end 1000 in the present embodiment with the same beneficial effects; this matter will not be discussed further here.

[0246] Refer to FIG. 12, which is a structural diagram of another receiving end provided by an embodiment of the present invention; as shown in FIG. 12, the receiving end comprises a processor 1200, a transceiver 1210, memory 1220, a user interface 1230, and a bus interface, wherein:

[0247] the processor 1200 is for reading programs in the memory 1220 and executing the process below:

[0248] the receiving end receiving, via the transceiver 1210, a second message associated with a first message from a transmitting end;

[0249] determining, based on said second message, a target receiver parameter for decoding said first message; and

[0250] decoding said first message transmitted by said transmitting end based on said target receiver parameter.

[0251] Therein, the transceiver 1210 is for receiving and transmitting data under the control of the processor 1200.

[0252] In FIG. 12, the bus architecture may include any number of interconnected buses and bridges, which specifically link together various circuits of one or more processors represented by processor 1200 and memories represented by memory 1220. The bus architecture may also link together various other circuits, such as circuits for a peripheral device, a voltage stabilizer, and a power management circuit, all of which is known in the art and therefore will not be described further in this document. The bus interface provides an interface. The transceiver 1210 may have multiple components, i.e., may include a transmitter and a receiver, and provide units for communicating over a transmission medium with various other apparatuses. With regard to different user devices, the user interface 1230 can also connect externally or internally with the interfaces of necessary devices; connected devices include but are not limited to a keypad, a display, a speaker, a microphone, and a joystick.

[0253] The processor 1200 is responsible for managing the bus architecture and general processing, and the memory 1220 may store data used by the processor 1200 when executing operations.

[0254] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information;

[0255] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0256] Optionally, the default receiver parameter of said receiving end comprises:

[0257] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0258] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

[0259] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0260] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0261] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

[0262] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0263] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

[0264] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said

first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, said second message is located before said first part content, and said receiving end decoding said first message based on said target receiver parameter comprises:

[0265] if said second message comprises parameter indication information, then decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0266] if said second message comprises parameter indication information, then discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0267] if said second message comprises parameter indication information, then decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0268] if said second message does not comprise beam indication information, then decoding said first part content and said second part content based on the default receiver parameter; or

[0269] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0270] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then discarding said first part content and decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0271] if said second message comprises a parameter indication field, and said parameter indication field comprises parameter indication information, then decoding said first part content based on the default receiver parameter and decoding said second part content based on said target receiver parameter indicated by said parameter indication information; or

[0272] if said second message comprises a parameter indication field, and said parameter indication field indicates no parameter indication information or no parameter change, then decoding said first part content and said second part content based on the default receiver parameter.

[0273] Optionally, the processor 1200 is further for:

[0274] receiving a third message from said transmitting end via the transceiver 1210, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said second message and said first message.

[0275] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0276] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0277] Optionally, a receiver parameter in said space domain comprises a reception beam for said receiving end.

[0278] It should be stated that the above-described receiving end in the present embodiment may be a terminal in the embodiments shown in FIGS. 1–7; any implementation of the receiving end among the embodiments shown in FIGS. 1–7 may be implemented by the above-described reception in the present embodiment with the same beneficial effects; this matter will not be discussed further here.

[0279] Refer to FIG. 13, which is a structural diagram of another transmitting end provided by an embodiment of the present invention; as shown in FIG. 13, the transmitting end comprises a processor 1300, a transceiver 1310, memory 1320, a user interface 1330, and a bus interface, wherein:

[0280] the processor 1300 is for reading programs in the memory 1320 and executing the process below:

[0281] transmitting via the transceiver 1310 a second message associated with a first message to a receiving end, wherein said second message is used by said receiving end to determine a target receiver

parameter for decoding said first message; and

[0282] transmitting said first message via said transceiver 1310 to said receiving end.

[0283] Therein, the transceiver 1310 is for receiving and transmitting data under the control of the processor 1300.

[0284] In FIG. 13, the bus architecture may include any number of interconnected buses and bridges, which specifically link together various circuits of one or more processors represented by processor 1300 and memories represented by memory 1320. The bus architecture may also link together various other circuits, such as circuits for a peripheral device and a voltage stabilizer and a power management circuit, all of which is known in the art and which therefore will not be described further in this document. The bus interface provides an interface. The transceiver 1310 may have multiple components, i.e., may include a transmitter and a receiver, and provide units for communicating over a transmission medium with various other apparatuses. With regard to different user devices, the user interface 1330 can also connect externally or internally with the interfaces of necessary devices; connected devices include but are not limited to a keypad, a display, a speaker, a microphone, and a joystick.

[0285] The processor 1300 is responsible for managing the bus architecture and general processing, and the memory 1320 may store data used by the processor 1300 when executing operations.

[0286] Optionally, if said second message comprises parameter indication information, then said target receiver parameter is a receiver parameter indicated by said parameter indication information; and

[0287] if said second message does not comprise parameter indication information, then said target receiver parameter is a default receiver parameter of said receiving end.

[0288] Optionally, the default receiver parameter of said receiving end comprises:

[0289] a receiver parameter currently used by said receiving end, a receiver parameter indicated by the second message most recently received by said receiving end, a predefined receiver parameter, or a receiver parameter corresponding to the transmitter parameter most recently reported by said receiving end to said transmitting end.

[0290] Optionally, said parameter indication information explicitly or implicitly indicates said target receiver parameter.

[0291] Optionally, if said parameter indication information implicitly indicates said target receiver parameter, then said parameter indication information comprises a transmitter parameter selected by said transmitting end, and said receiving end treats a receiver parameter preselected for said transmitter parameter as said target receiver parameter.

[0292] Optionally, if said second message is received within a scheduling time unit corresponding to a predetermined parameter switching indication set, then said second message comprises parameter indication information, and a gap exists between said second message and said first message; and

[0293] if said second message is received outside of a scheduling time unit corresponding to said parameter switching indication set, then said second message does not comprise parameter indication information, and no gap exists between said second message and said first message.

[0294] Optionally, the scheduling time unit corresponding to said parameter switching indication set exists periodically in a time domain; and/or

[0295] the scheduling time unit corresponding to said parameter switching indication set is configured semi-statically or semi-persistently by said transmitting end, and said receiving end is notified thereof.

[0296] Optionally, said first message is divided into first part content and second part content that are consecutive in a time domain, wherein said first part content is located before said second part content, said first part content is consecutive to said second message in a time domain, and said second message is located before said first part content.

[0297] Optionally, the processor 1300 is further for:

[0298] transmitting a third message to said receiving end via the transceiver 1310, wherein said third message is for indicating whether said second message comprises parameter indication information, and if said third message indicates that said second message comprises parameter indication information, then a gap exists between said second message and said first message; and if said third message indicates that said second message does not comprise parameter indication information, then no gap exists between said

second message and said first message.

[0299] Optionally, said third message is for indicating whether a second message in M time units comprises parameter indication information, where said M is an integer greater than or equal to 1, and said M time units are consecutive or nonconsecutive.

[0300] Optionally, said target receiver parameter comprises a receiver parameter in at least one of a time domain, a frequency domain, and a space domain.

[0301] Optionally, a receiver parameter in said space domain comprises a reception beam for said receiving end.

[0302] It should be stated that the above-described transmitting end in the present embodiment may be a transmitting end in the embodiments shown in FIGS. 1–7; any implementation of the transmitting end among the embodiments shown in FIGS. 1–7 may be implemented by the above-described transmitting end in the present embodiment with the same beneficial effects; this matter will not be discussed further here.

[0303] It should be understood that, among the several embodiments provided by the present application, the disclosed methods and apparatuses may be otherwise implemented. For example, the apparatus embodiments described above are merely illustrative; for example, partitioning into said units is merely a partitioning into logical functions; during actual implementation, there may be other manners of partitioning, e.g., a plurality of units or components may be combined or may be integrated into another system, or some features may be omitted or not executed. In addition, depicted or discussed coupling connections, direct couplings, or communication connections may be realized through interfaces; indirect couplings of apparatuses or units or communication connections may be electrical or mechanical or may assume some other form.

[0304] In addition, the functional units in all the embodiments of the present invention may be integrated into one processing unit, or each unit may individually be physically included; or two or more units may be integrated in a single unit. The above-described integrated unit may be implemented in hardware form or may be implemented in the form of hardware with functional software units.

[0305] Integrated units implemented in the form of the above-described functional software units may be stored in one computer-readable storage medium. The above-described functional software units stored in one storage medium include a number of instructions whose purpose is to cause a computer device (which could be a personal computer, a server, or a network device) to execute some of the steps in the reception and transmission methods described in the various embodiments of the present invention. Moreover, the previously described storage medium includes various media capable of storing program code, such as USB flash drives, portable hard drives, read-only memory (ROM), random access memory (RAM), magnetic disks, or optical disks.

[0306] The above are preferred implementations of the present invention. It should be pointed out that it is possible for a person with ordinary skill in the art to make a number of improvements and refinements without departing from the principles described by the present invention and that these improvements and refinements should also be regarded as within the protective scope of the present invention.

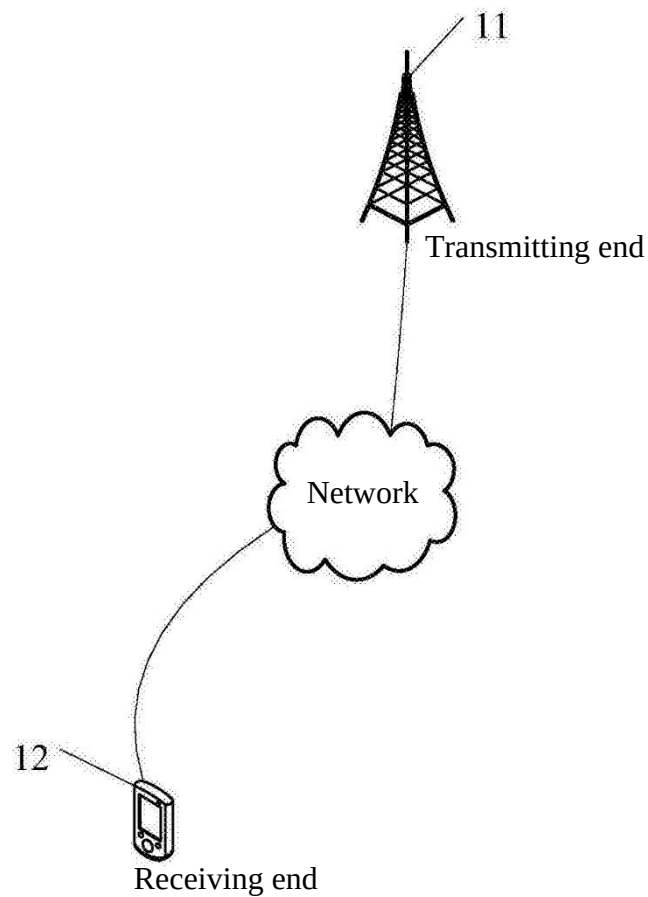


FIG. 1

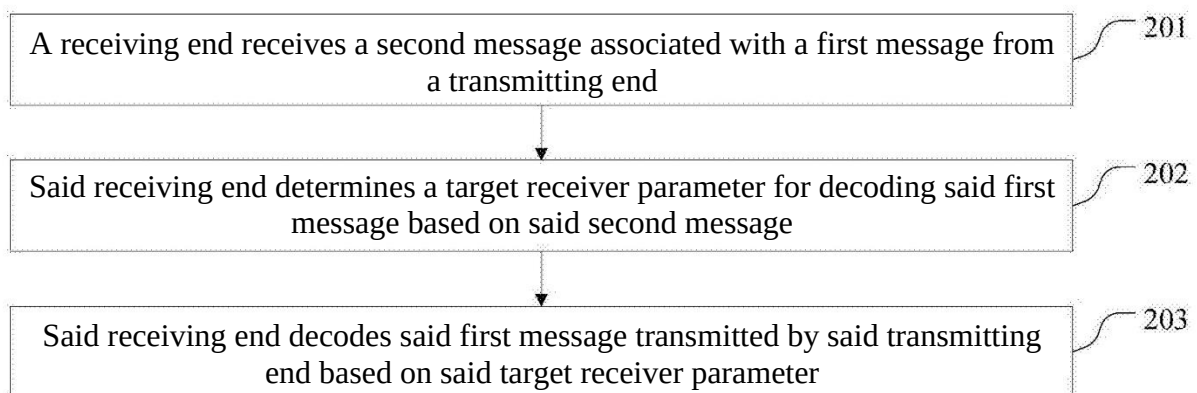


FIG. 2

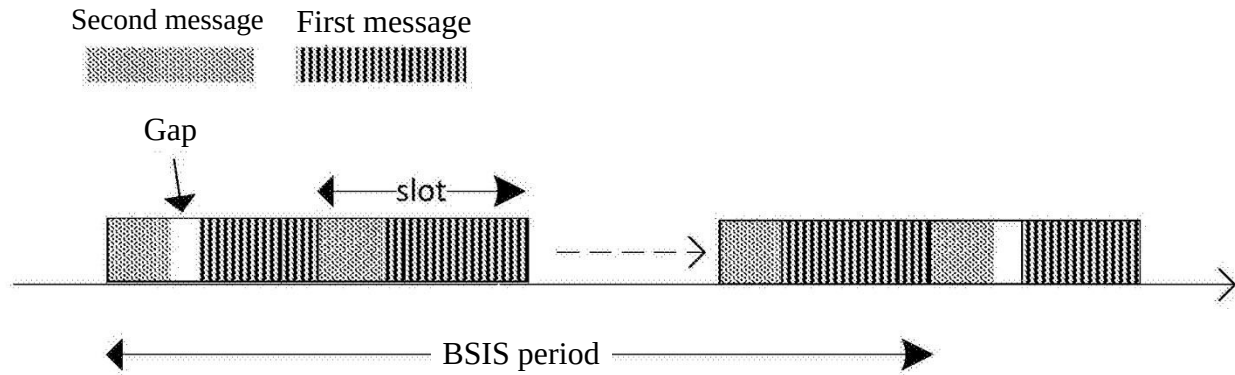


FIG. 3

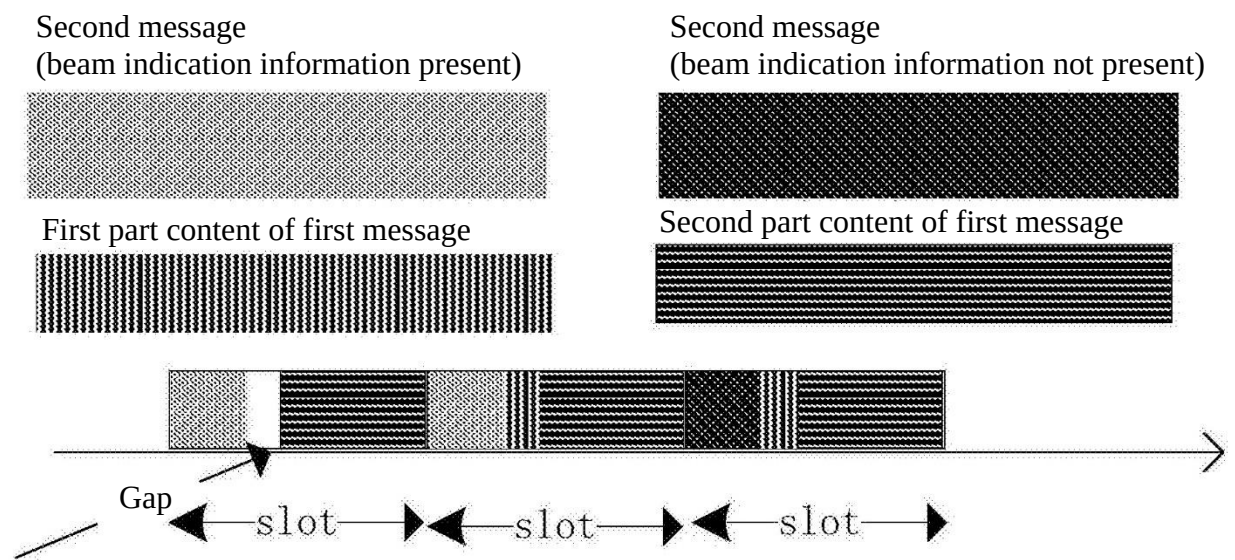


FIG. 4

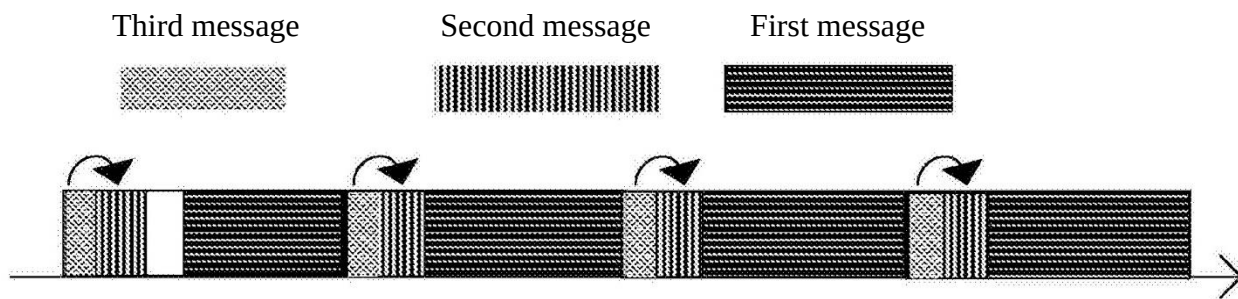


FIG. 5

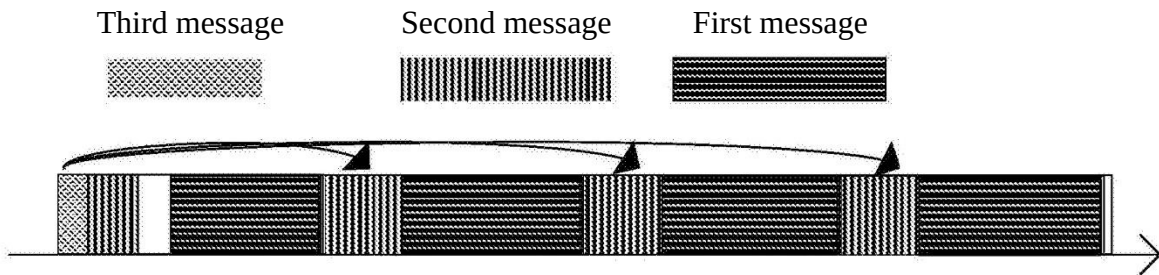


FIG. 6

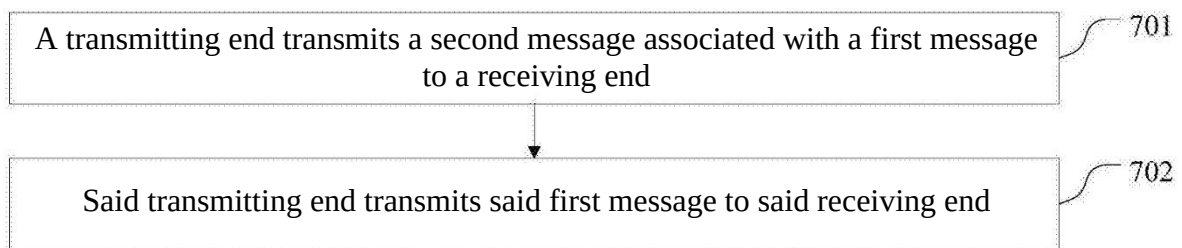


FIG. 7

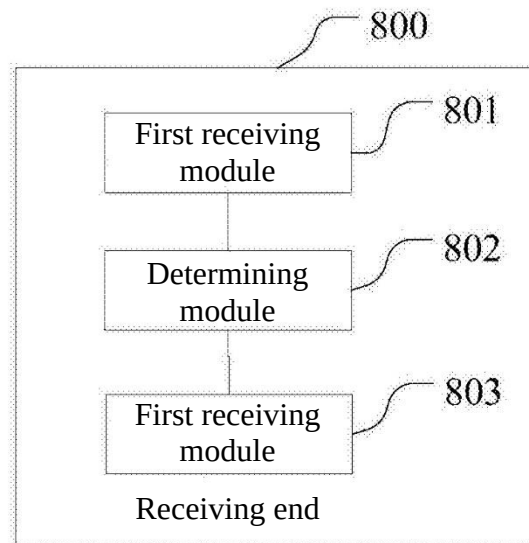


FIG. 8

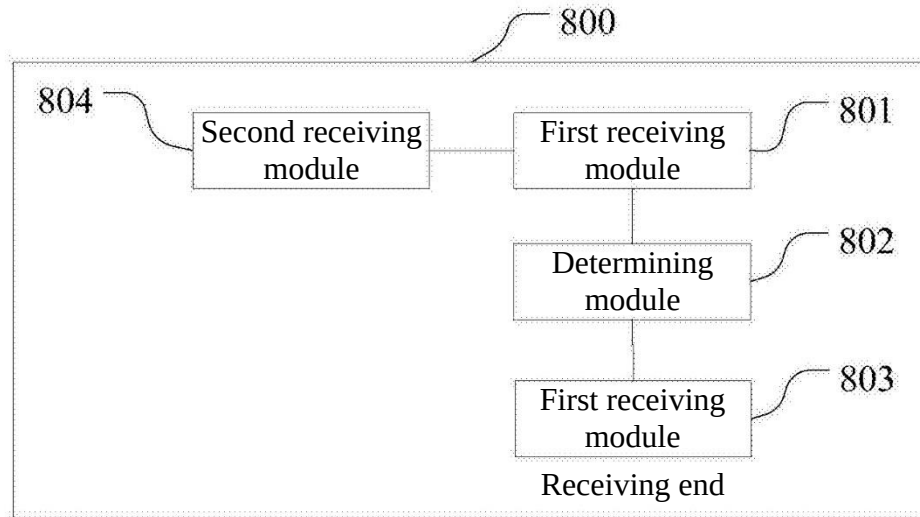


FIG. 9

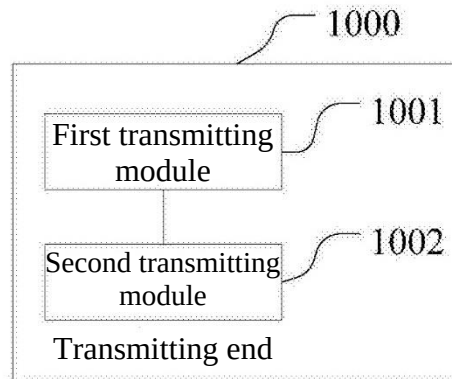


FIG. 10

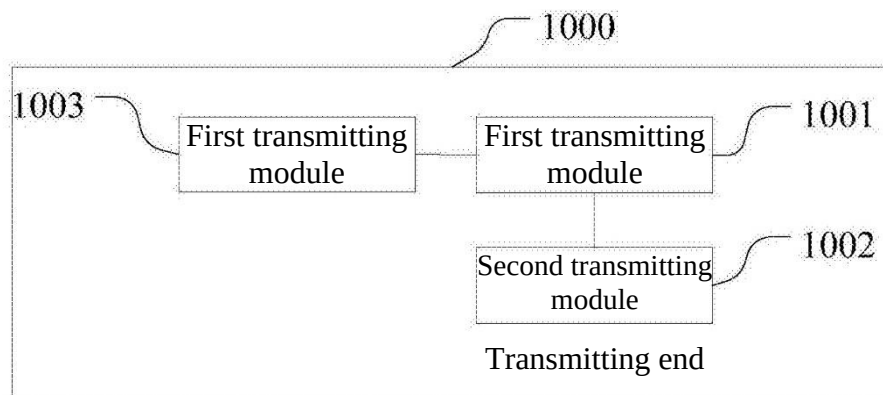


FIG. 11

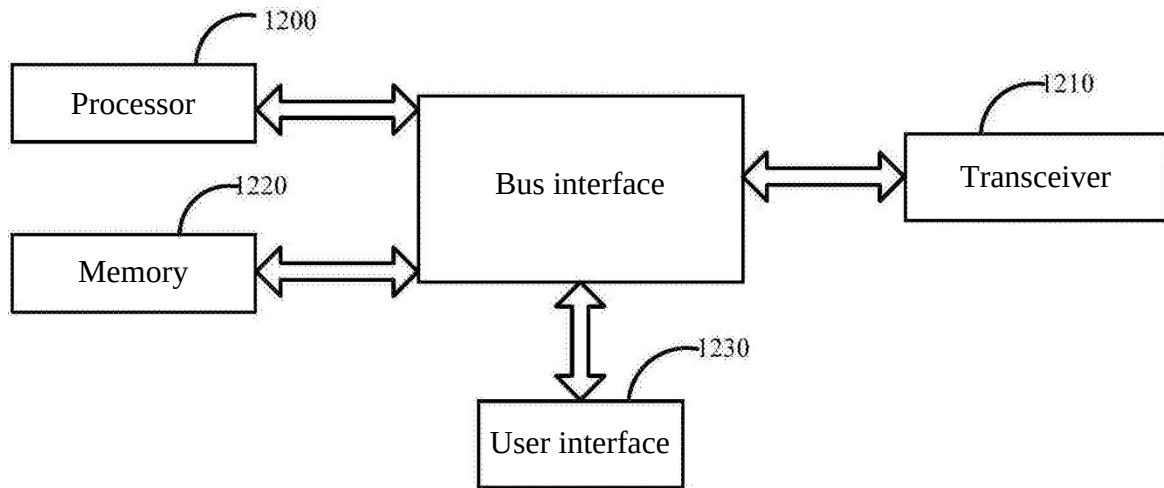


FIG. 12

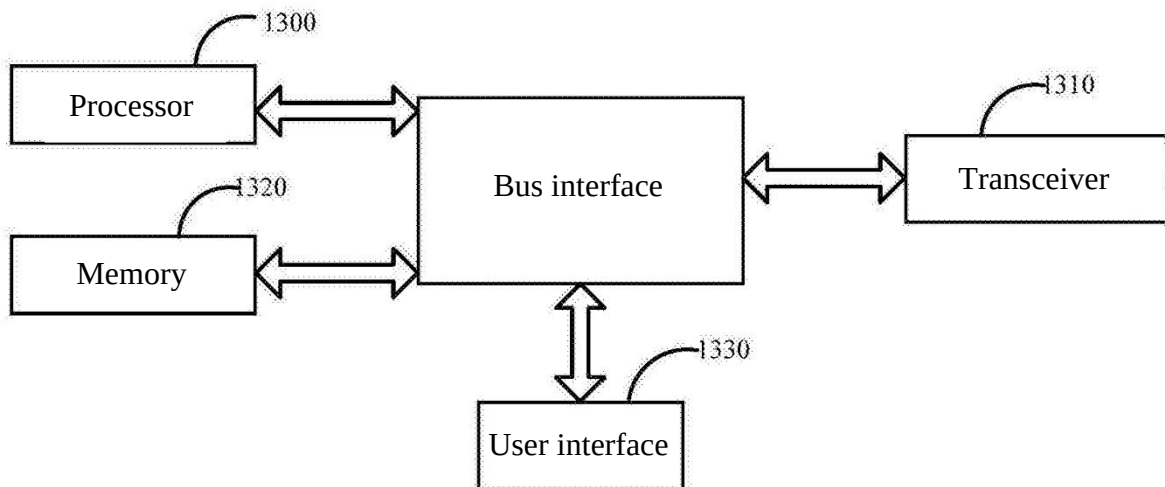
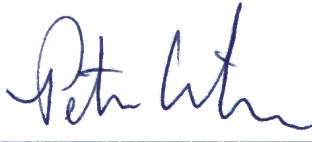


FIG. 13

I, Peter Erickson, declare as follows:

1. I am over 21 years of age and am competent to make this declaration.
2. I am a native speaker of English.
3. I am fluent in Chinese.
4. I have over 30 years of experience translating Chinese to English.
5. I translated the attached patent document "CN108809488A" from Chinese to English.
6. I certify that the translation of the document "CN108809488A" is, to the best of my knowledge, a true and accurate translation from Chinese to English.
7. In signing this declaration, I understand that the translation and this declaration may be filed as evidence in a contested case. I acknowledge that I may be subject to cross-examination within the United States.
8. I declare under penalty of perjury that all statements made herein are true and accurate to the best of my knowledge and belief, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed: February 24, 2023

By: 
Peter Erickson



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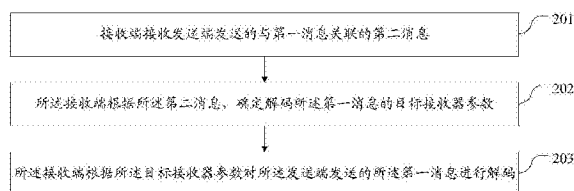
权利要求书5页 说明书20页 附图5页

(54)发明名称

一种消息解码方法、发送端和接收端

(57)摘要

本发明提供一种消息解码方法、发送端和接收端,该方法可包括:接收端接收发送端发送的与第一消息关联的第二消息;所述接收端根据所述第二消息,确定解码所述第一消息的目标接收器参数;所述接收端根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。这样本发明实施例可以实现接收端根据与第一消息关联的第二消息确定接收器参数,且还可以提高消息传输性能。



1. 一种消息解码方法,其特征在于,包括:

接收端接收发送端发送的与第一消息关联的第二消息;

所述接收端根据所述第二消息,确定解码所述第一消息的目标接收器参数;

所述接收端根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。

2. 如权利要求1所述的方法,其特征在于,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认为接收器参数。

3. 如权利要求2所述的方法,其特征在于,所述接收端默认为接收器参数包括:

所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

4. 如权利要求2所述的方法,其特征在于,所述参数指示信息显式或者隐式指示所述目标接收器参数。

5. 如权利要求4所述的方法,其特征在于,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

6. 如权利要求1-5中任一项所述的方法,其特征在于,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

7. 如权利要求6所述的方法,其特征在于,所述参数切换指示集对应的调度时间单位在时域上周期存在;和/或

所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。

8. 如权利要求1-5中任一项所述的方法,其特征在于,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前,所述接收端根据所述目标接收器参数对所述第一消息进行解码,包括:

若所述第二消息包括参数指示信息,则所述接收端根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

若所述第二消息包括参数指示信息,则所述接收端丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

若所述第二消息包括参数指示信息,则所述接收端根据默认为接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

若所述第二消息不包括波束指示信息,则所述接收端根据默认为接收器参数对所述第一部分内容和第二部分内容进行解码;或者

若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端根据默认接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

若所述第二消息包括参数指示字段,且所述参数指示字段指示没有参数指示信息或者没有参数改变,则所述接收端根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

9. 如权利要求1-5中任一项所述的方法,其特征在于,所述方法还包括:

所述接收端接收所述发送端发送的第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

10. 如权利要求9所述的方法,其特征在于,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

11. 如权利要求1-5中任一项所述的方法,其特征在于,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

12. 如权利要求11所述的方法,其特征在于,所述空域的接收器参数包括所述接收端的接收波束。

13. 一种消息解码方法,其特征在于,包括:

发送端向接收端发送与第一消息关联的第二消息,所述第二消息用于所述接收端确定解码所述第一消息的目标接收器参数;

所述发送端向所述接收端发送所述第一消息。

14. 如权利要求13所述的方法,其特征在于,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。

15. 如权利要求14所述的方法,其特征在于,所述接收端默认的接收器参数包括:

所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

16. 如权利要求14所述的方法,其特征在于,所述参数指示信息显式或者隐式指示所述目标接收器参数。

17. 如权利要求16所述的方法,其特征在于,若所述参数指示信息隐式指示所述目标接

收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

18.如权利要求13-17中任一项所述的方法,其特征在于,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

19.如权利要求18所述的方法,其特征在于,所述参数切换指示集对应的调度时间单位在时域上周期存在;和\或

所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。

20.如权利要求13-17中任一项所述的方法,其特征在于,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前。

21.如权利要求13-17中任一项所述的方法,其特征在于,所述方法还包括:

所述发送端向所述接收端发送第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

22.如权利要求21所述的方法,其特征在于,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

23.如权利要求13-17中任一项所述的方法,其特征在于,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

24.如权利要求23所述的方法,其特征在于,所述空域的接收器参数包括所述接收端的接收波束。

25.一种接收端,其特征在于,包括:

第一接收模块,用于接收发送端发送的与第一消息关联的第二消息;

确定模块,用于根据所述第二消息,确定解码所述第一消息的目标接收器参数;

解码模块,用于根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。

26.如权利要求25所述的接收端,其特征在于,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认接收器参数。

27.如权利要求25或26所述的接收端,其特征在于,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

28. 如权利要求25或26所述的接收端,其特征在于,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前;

所述解码模块用于若所述第二消息包括参数指示信息,则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

所述解码模块用于若所述第二消息包括参数指示信息,则丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

所述解码模块用于若所述第二消息包括参数指示信息,则根据默认的接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

所述解码模块用于若所述第二消息不包括波束指示信息,则根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码;或者

所述解码模块用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

所述解码模块用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

所述解码模块用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则根据默认的接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

所述解码模块用于若所述第二消息包括参数指示字段,且所述参数指示字段指示没有参数指示信息或者没有参数改变,则根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码。

29. 如权利要求25或26所述的接收端,其特征在于,所述接收端还包括:

第二接收模块,用于接收所述发送端发送的第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

30. 一种发送端,其特征在于,包括:

第一发送模块,用于发送端向接收端发送与第一消息关联的第二消息,所述第二消息用于所述接收端确定解码所述第一消息的目标接收器参数;

第二发送模块,用于向所述接收端发送所述第一消息。

31. 如权利要求30所述的发送端,其特征在于,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。

32. 如权利要求30或31所述的发送端,其特征在于,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

33. 如权利要求30或31所述的发送端,其特征在于,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前。

34. 如权利要求30或31所述的发送端,其特征在于,所述发送端还包括:

第二发送模块,用于向所述接收端发送第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

一种消息解码方法、发送端和接收端

技术领域

[0001] 本发明涉及通信技术领域,特别涉及一种消息解码方法、发送端和接收端。

背景技术

[0002] 随着通信技术的发展,目前通信设备均支持多天线系统,例如:支持高达128、256或者512个天线单元,以及高达128、256或者512个收发单元,每个天线单元连接一个收发单元。且目前通信设备还支持多波束,不同的波束的覆盖范围可以不同。这样发送端(例如:网络侧设备)在发送消息时,就可以在多个发送器参数(例如:发送波束)中选择相应的发送器参数进行发送,以提高通信性能。而接收端(例如:用户终端)如何选择相应的接收器参数(例如:接收波束)对发送端发送的消息进行解码目前还未明确。可见,接收端如何选择相应的接收器参数对发送端发送的消息进行解码是当前急需解决的技术问题。

发明内容

[0003] 本发明的目的在于提供一种消息解码方法、发送端和接收端,以解决接收端如何选择相应的接收器参数对发送端发送的消息进行解码的问题。

[0004] 为了达到上述目的,本发明实施例提供一种消息解码方法,包括:

[0005] 接收端接收发送端发送的与第一消息关联的第二消息;

[0006] 所述接收端根据所述第二消息,确定解码所述第一消息的目标接收器参数;

[0007] 所述接收端根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。

[0008] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0009] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。

[0010] 可选的,所述接收端默认的接收器参数包括:

[0011] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0012] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。

[0013] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0014] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0015] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所

述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

[0016] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和\或

[0017] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。

[0018] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前,所述接收端根据所述目标接收器参数对所述第一消息进行解码,包括:

[0019] 若所述第二消息包括参数指示信息,则所述接收端根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0020] 若所述第二消息包括参数指示信息,则所述接收端丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0021] 若所述第二消息包括参数指示信息,则所述接收端根据默认接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0022] 若所述第二消息不包括波束指示信息,则所述接收端根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码;或者

[0023] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0024] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0025] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端根据默认接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0026] 若所述第二消息包括参数指示字段,且所述参数指示字段指示没有参数指示信息或者没有参数改变,则所述接收端根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

[0027] 可选的,所述方法还包括:

[0028] 所述接收端接收所述发送端发送的第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

[0029] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

[0030] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

[0031] 可选的,所述空域的接收器参数包括所述接收端的接收波束。

[0032] 本发明实施例还提供一种消息解码方法,包括:

- [0033] 发送端向接收端发送与第一消息关联的第二消息,所述第二消息用于所述接收端确定解码所述第一消息的目标接收器参数;
- [0034] 所述发送端向所述接收端发送所述第一消息。
- [0035] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;
- [0036] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。
- [0037] 可选的,所述接收端默认的接收器参数包括:
- [0038] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。
- [0039] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。
- [0040] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。
- [0041] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;
- [0042] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。
- [0043] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和/或
- [0044] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。
- [0045] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前。
- [0046] 可选的,所述方法还包括:
- [0047] 所述发送端向所述接收端发送第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。
- [0048] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。
- [0049] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。
- [0050] 可选的,所述空域的接收器参数包括所述接收端的接收波束。
- [0051] 本发明实施例还提供一种接收端,包括:
- [0052] 第一接收模块,用于接收发送端发送的与第一消息关联的第二消息;
- [0053] 确定模块,用于根据所述第二消息,确定解码所述第一消息的目标接收器参数;
- [0054] 解码模块,用于根据所述目标接收器参数对所述发送端发送的所述第一消息进行

解码。

[0055] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0056] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认接收器参数。

[0057] 可选的,所述接收端默认的接收器参数包括:

[0058] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0059] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。

[0060] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0061] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0062] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

[0063] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和/或

[0064] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。

[0065] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前;

[0066] 所述解码模块用于若所述第二消息包括参数指示信息,则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0067] 所述解码模块用于若所述第二消息包括参数指示信息,则丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0068] 所述解码模块用于若所述第二消息包括参数指示信息,则根据默认的接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0069] 所述解码模块用于若所述第二消息不包括波束指示信息,则根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码;或者

[0070] 所述解码模块用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0071] 所述解码模块用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接

收器参数对所述第二部分内容进行解码;或者

[0072] 所述解码模块用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则根据默认接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0073] 所述解码模块用于若所述第二消息包括参数指示字段,且所述参数指示字段指示没有参数指示信息或者没有参数改变,则根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

[0074] 可选的,所述接收端还包括:

[0075] 第二接收模块,用于接收所述发送端发送的第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

[0076] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

[0077] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

[0078] 可选的,所述空域的接收器参数包括所述接收端的接收波束。

[0079] 本发明实施例还提供一种发送端,包括:

[0080] 第一发送模块,用于发送端向接收端发送与第一消息关联的第二消息,所述第二消息用于所述接收端确定解码所述第一消息的目标接收器参数;

[0081] 第二发送模块,用于向所述接收端发送所述第一消息。

[0082] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0083] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。

[0084] 可选的,所述接收端默认的接收器参数包括:

[0085] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0086] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。

[0087] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0088] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0089] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

[0090] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和/或

[0091] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并

通知所述接收端。

[0092] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前。

[0093] 可选的,所述发送端还包括:

[0094] 第二发送模块,用于向所述接收端发送第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

[0095] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

[0096] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

[0097] 可选的,所述空域的接收器参数包括所述接收端的接收波束。

[0098] 本发明实施例还提供一种接收端,其特征在于,包括:处理器、收发机、存储器、用户接口和总线接口,其中:

[0099] 所述处理器,用于读取所述存储器中的程序,执行本发明实施例提供的接收端侧对应的消息解码方法中的步骤。

[0100] 本发明实施例还提供一种发送端,其特征在于,包括:处理器、收发机、存储器、用户接口和总线接口,其中:

[0101] 所述处理器,用于读取所述存储器中的程序,执行本发明实施例提供的发送侧对应的消息解码方法的步骤。

[0102] 本发明的上述技术方案至少具有如下有益效果:

[0103] 本发明实施例,接收端接收发送端发送的与第一消息关联的第二消息;所述接收端根据所述第二消息,确定解码所述第一消息的目标接收器参数;所述接收端根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。这样可以实现接收端根据与第一消息关联的第二消息确定接收器参数,且还可以提高消息传输性能。

附图说明

[0104] 图1为本发明实施例可应用的网络结构示意图;

[0105] 图2为本发明实施例提供的一种消息解码方法的流程图;

[0106] 图3为本发明实施例提供的一种消息发送的示意图;

[0107] 图4为本发明实施例提供的另一种消息发送的示意图;

[0108] 图5为本发明实施例提供的另一种消息发送的示意图;

[0109] 图6为本发明实施例提供的另一种消息发送的示意图;

[0110] 图7为本发明实施例提供的另一种消息解码方法的流程图;

[0111] 图8为本发明实施例提供的一种接收端的结构示意图;

[0112] 图9为本发明实施例提供的另一种接收端的结构示意图;

[0113] 图10为本发明实施例提供的一种发送端的结构示意图;

[0114] 图11为本发明实施例提供的另一种发送端的结构示意图;

[0115] 图12为本发明实施例提供的另一种接收端的结构示意图；

[0116] 图13为本发明实施例提供的另一种发送端的结构示意图。

具体实施方式

[0117] 为使本发明要解决的技术问题、技术方案和优点更加清楚，下面将结合附图及具体实施例进行详细描述。

[0118] 参见图1，图1为本发明实施例可应用的网络结构示意图，如图1所示，包括发送端11和接收端12，其中，发送端11可以是基站或者终端，而接收端12也可以是终端或者基站，例如：发送端11为基站，接收端12为终端，则可以实现终端与基站之间的通信，又或者发送端11为终端，则接收端12为基站，也可以实现终端与基站之间的通信，又或者发送端11为基站，接收端12也为基站，则可以实现基站与基站之间的通信，又或者发送端11为终端，接收端12也为终端，则可以实现终端与终端之间的通信。当然，本发明实施例中，并限定发送端11只能是终端或者基站，例如：发送端11还可以是其他的网络侧设备，同理，接收端12也并限定只是终端或者设备，例如：接收端12还可以是其他的网络侧设备，对此本发明实施例不作限定。其中，附图1，以发送端11为基站，接收端12为终端进行举例示意。终端可以是用户终端 (User Equipment, UE)，例如：可以是手机、平板电脑 (Tablet Personal Computer)、膝上型电脑 (Laptop Computer)、个人数字助理 (personal digital assistant, 简称PDA)、移动上网装置 (Mobile Internet Device, MID) 或可穿戴式设备 (Wearable Device) 等终端侧设备，需要说明的是，在本发明实施例中并限定终端的具体类型。基站可以是宏站，如LTE eNB、5G NR NB等；也可以是小站，如低功率节点 (LPN: low power node) pico, femto等小站，或者可以是接入点 (AP, access point)；基站也可以是中央单元 (CU, central unit) 与其管理和控制的多个传输接收点 (TRP, Transmission Reception Point) 共同组成的网络节点。另外，一个基站下有一个或多个小区 (例如：不同的频点或扇区分裂)。需要说明的是，在本发明实施例中并限定基站的具体类型。

[0119] 请参考图2，图2是本本发明实施例提供一种消息解码方法的流程图，如图2所示，包括以下步骤：

[0120] 201、接收端接收发送端发送的与第一消息关联的第二消息；

[0121] 202、所述接收端根据所述第二消息，确定解码所述第一消息的目标接收器参数；

[0122] 203、所述接收端根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。

[0123] 其中，上述第一消息可以是发送端需要向接收端发送的信号，例如：数据和/或控制消息等等，如上述第一消息可以是下行链路信号。另外，本发明实施例中，可以将第一消息定义为msg1。而上述第二消息可以理解为用于通知接收端接收器参考的消息，例如：控制消息或者调度消息等等，另外，本发明实施例中第二消息可以定义为msg2。

[0124] 上述根据所述第二消息，确定解码所述第一消息的目标接收器参数可以是，若上述第二消息中包括了参数指示信息，则确定该参数指示信息指示的接收器参数作为上述目标器参数，若上述第二消息中不包括参数指示信息，则确定默认接收器参数作为上述目标器参数。即本发明实施例中，上述第二消息可以存在两种情况，一种是存在参数指示信息，该情况下接收端可能需要进行接收器参数切换，再对发送端发送的消息进行解码。另一

种是不存在参数指示信息,该情况下接收端可能不需要进行波束接收器参数切换,直接对接收端发送的消息进行解码。另外,目标接收器参数可以是接收端中接收器的相关参数,例如:接收波束、均衡器和接收滤波器等参数中的至少一项,对此本发明实施例不作限定。例如:以目标接收器参数为目标接收波束为例,上述确定解码所述第一消息的目标接收波束还可以是在接收端的多个接收波束(Rx波束)中选择一个或者多个接收波束。且接收端的多个接收器参数可以是与发送端无关的,或者接收端的多个接收器参数对于发送端来说也可以是已知的,例如:通过预配置或反馈通知发送端,对此本发明实施例不作限定。

[0125] 本发明实施例中,通过上述步骤就可以实现通过专门的第二消息向接收端通知发送端发送的第一消息的接收波束,从而使接收端和发送端获得更准确的波束组合信息,支持多波束传输,以及提高波束传输性能。另外,本发明实施例可以用于在无线通信系统中的接收端的模拟波束切换,以及还可以用于接收端的数字波束切换等,对此本发明实施例不作限定。

[0126] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0127] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。

[0128] 该实施方式中,可以实现上述第二消息中包括或者不包括参数指示信息,若包括,则将参数指示信息指示的接收器参数作为上述目标接收器参数。其中,参数指示信息指示接收波束可以是与接收端当前使用的接收器参数为不同的接收器参数,这时接收端需要进行接收器参数切换。而使用默认的接收器参数,可以不进行切换,例如:默认的接收器参数就可以是接收端当前使用的接收器参数,以快速对发送端发送的消息进行解码。另外,本发明实施例中,第二消息中的参数指示信息可以是,第二消息中的参数指示字段,即第二消息中可以存在或者不存在该参数指示字段。

[0129] 例如:所述接收端默认的接收器参数包括:

[0130] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0131] 该实施方式中,通过上述默认波束可以减少接收器参数的切换,例如:减少接收波束的切换,以提高传输性能,例如:第二消息与第一消息之间可以不存在间隙。

[0132] 另外,本发明实施例中,上述参数指示信息可以显式或者隐式指示所述目标接收器参数。例如:显式或者隐式指示所述目标接收波束。

[0133] 其中,显式指示可以理解为直接指示,例如:以接收波束举例,接收端具有一组L个预配置的接收波束,这些对于发送端可以是已知的。这样上述参数指示信息就携带 $\log_2(L)$ 位的字段,以指示接收端的推荐接收波束。在接收到第二消息后,接收端就可以确定对应的接收波束用于解码msg1。而上述隐式指示可以理解为间接指示,例如:上述参数指示信息可以是指示发送波束(Tx波束),通过指示的发送波束隐式指示该发送波束对应的接收波束。该实施方式中,通过上述显式或者隐式的方式可以实现灵活地向接收端指示接收波束,以提高系统的灵活性。

[0134] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信

息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0135] 该实施方式中,可以实现通过发送器参数来隐式指示接收器参数,例如:以目标接收器参数为目标波束举例,发送端可以具有用于下行链路传输的M个候选发送波束。发送端配置M个参考符号(RS)资源,并将每个发送波束应用于相应的RS资源。对于每个RS资源,接收端可以测试一组候选接收波束,并确定每个RS资源(例如发送波束)的最佳接收波束。优选的,接收端可以将至少推荐的发送波束的信息反馈给发送端,例如,以推荐的RS资源的形式,但这一步是可选的。在发送第一消息之前,发送端以第二消息的方式发送其选定的发送波束的指示。接收端接收到第二消息后,获得所使用的发送波束的信息,并获得最佳的接收波束作为上述目标接收波束,该最佳的接收波束可以是从小前的测量已知并保存在接收端中。

[0136] 该实施方式中,可以实现通过发送器参数来隐式指示接收器参数,从而有利于接收端与发送端之间的传输。当然,在一些实施方式中,发送端可以是根据接收端返回的推荐信息自主选择相应的发送器参数,例如:发送波束。

[0137] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0138] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

[0139] 该实施方式中,上述参数切换指示集(BSIS)对应的调度时间单位可以是子帧或者时隙(slots)等时间单位。且发送端和接收端对BSIS可以具有一致的认识。只有在BSIS对应的slot(这里以slot为例)中,第二消息才可能会携带参数指示信息,否则第二消息不携带波束指示信息。这意味着在BSIS对应的时隙之外的所有时隙中可以不执行接收器参数切换,例如:接收波束切换,而仅在周期性的选定时隙(例如BSIS中的时隙)中执行接收器参数切换。

[0140] 另外,由于第二消息包括参数指示信息时,所述第二消息与所述第一消息之间存在间隙,这样接收端可以是在该间隙切换进行接收器参数切换,例如:接收波束切换,从而不影响消息的传输。而所述第二消息不包括参数指示信息时,所述第二消息与所述第一消息之间可以不存在间隙,这样可以节约传输资源,因为该情况下,接收端可能是不需要进行接收器参数切换,例如:接收波束切换,进而第二消息和第一消息连续传输也不会影响接收端的解码。且上述第二消息和第一消息可以采用相同的频域资源发送的,或者采用相同的信道发送等,对此本发明实施例不作限定。

[0141] 例如:对于在BSIS中的时隙中发送的第二消息,携带波束指示信息。在这种情况下,同一时隙中的第一消息和第二消息之间有切换时间。否则对于BSIS外的时隙中的第二消息传输,发送端发送第二消息,而不携带波束指示字段。在这种情况下,接收端可以准备在第二消息之后立即接收第一消息(没有间隙)。例如:图3所示的第二个slot。另外,当尝试在每个时隙中接收到第二消息或者第一消息时,接收端可以根据假定存在或者不存在波束指示信息来解码第二消息。换句话说,在BSIS中的时隙中,第二消息可以携带参数指示信息,接收端尝试解码第二消息,假设有一个参数指示信息。在其他时隙中,接收器解码第二

消息,假设没有参数指示信息。在第二消息不携带参数指示信息的时隙中,接收端仍然可以选择一个接收器参数(例如:接收波束)来解码第一消息。接收端可以使用在最新的携带参数指示字段的第二消息中指示的接收器参数。如果没有接收到参数指示信息,则接收机可以使用默认接收器参数来解码第一消息。

[0142] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和\或

[0143] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续(semi-persistent)配置,并通知所述接收端。

[0144] 其中,上述参数切换指示集对应的调度时间单位在时域上周期存在可以是,上述参数切换指示集对应的调度时间单位具有周期性,例如:参数切换指示集在时域中可以周期性地具有预配置的周期和定时偏移,其中,该定时偏移可以是相对于另一个定时参考的偏移,如帧边界。例如,参数切换指示集可以具有10ms的周期,其指示在10个slots中的1个中发送的第二消息可能会携带参数指示信息,而其他9个slots中的第二消息不携带参数指示信息。上述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端可以是,发送端半静态或半持续配置,并通知接收端参数切换指示集的集合,即指示多个参数切换指示集。或者上述参数切换指示集可以由接收端获得,并作为推荐被反馈给发送端。发送端可以使用接收端推荐的参数切换指示集,或覆盖接收端推荐的参数切换指示集,并选择一个新的参数切换指示集。发送端可以需要向接收端指示是否确认接收端推荐的参数切换指示集,或者将其选择的参数切换指示集指示给接收端。

[0145] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前,所述接收端根据所述目标接收器参数对所述第一消息进行解码,包括:

[0146] 若所述第二消息包括参数指示信息,则所述接收端根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0147] 若所述第二消息包括参数指示信息,则所述接收端丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0148] 若所述第二消息包括参数指示信息,则所述接收端根据默认的接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0149] 若所述第二消息不包括波束指示信息,则所述接收端根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码。

[0150] 该实施方式中,所述第一消息分为时域上连续的第一部分内容和第二部分内容可以是接收端将第一消息分为两个部分,这里分为可以理解为将第一消息看作两个部分,因为,此时接收端还未接收到第一消息,不能对其进行拆分。

[0151] 例如:发送端可以发送携带与接收第一消息有关的下行调度信息的第二消息。第二消息可以携带或不携带参数指示信息,对此接收端可以没有先验知识。如果第二消息没有参数指示信息,则第二消息的有效载荷较小(表示为A位)。如果第二消息具有参数指示信息,则第二消息的有效载荷较大(表示为B位,其中 $B > A$)。在发送端发送第二消息后,接收端可以尝试用盲解码第二消息。因为,接收端没有关于第二消息的有效载荷的先验信息,因此

需要基于不同的可能的第二消息有效载荷来执行盲解码。例如,接收端将执行假设有效载荷A位的第二消息的一次盲解码,以及假设B位的有效载荷的另一个第二消息的盲解码。这样根据第二消息的实际有效负载,两个盲解码之一将成功解码第二消息。之后,接收端就可以将第一消息分为第一部分内容和第二部分内容(partland part 2),第一部分内容在第二部分内容前面,并且在时域中为时分复用(TDM)。第一消息的第一部分部分紧随着第二消息,即两者没有间隙,第一消息的第二部分内容紧邻第一部分内容,例如:图4所示的第二个slot。

[0152] 另外,由于第一部分内容和第二部分内容属于同一消息,从而接收端可以分别对第一部分内容和第二部分内容执行符号级处理。

[0153] 该实施方式中,由于若所述第二消息包括参数指示信息时,则所述接收端使用所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码,其中,所述发送端未发送所述第一部分内容。例如:图4所示的第一个slot。这样可以提高接收端解码的准确性。

[0154] 另外,由于第二消息包括参数指示信息时,可以丢弃所述第一部分内容,以及使用所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码。即可以丢弃图4所示的第二个slot的第一部分内容,同样能够保证发送端与接收端之间的性能,因为,在该情况下发送端可以在第一部分内容中传输非重要信息,而在第二部分内容中传输重要信息。

[0155] 另外,由于第二消息包括参数指示信息时,可以使用默认的接收器参数对所述第一部分内容进行解码,以及使用所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码。这样可以实现接收到准备地解码第一部分部分和第二部分内容。

[0156] 另外,由于第二消息不包括参数指示信息,可以实现使用默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码。即图4所示的第三个slot。

[0157] 另外,发送端和接收端可以将其对接收端上确切的第一消息解码行为的理解对齐。这可以由网络半静态地或半持续地配置给接收端,或者使用另一个动态控制消息动态地指示给接收端。

[0158] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前,所述接收端根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码,包括:

[0159] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0160] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0161] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则所述接收端根据默认的接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0162] 若所述第二消息包括参数指示字段,且所述参数指示字段指示没有参数指示信息或者没有参数改变,则所述接收端根据默认接收器参数对所述第一部分内容和所述第二部分内容进行解码。

[0163] 该实施方式中,可以实现第二消息终具有参数指示字段,例如:波束指示字段,例如S比特位。且参数指示字段具有至少一个状态指示,即没有参数指示信息或者没有参数改变的状态指示,以及还可以指示用于解码第一消息的接收器参数的其他状态。因此,第二消息的有效载荷预先已知到发送端和接收端。例如对应于4个可能的接收器参数指示状态的 $S=2$ 。一个状态向接收机指示存在“没有参数指示信息或者没有参数改变”,而其他3个状态指示到接收机的接收器参数。

[0164] 另外,该实施方式中,关于第一消息的第一部分内容和第二部分内容可以参考上一实施方式中的相应描述,此处不作赘述。

[0165] 且关于第二消息中是否包括参数指示信息的情况,如何对第一部分内容和第二部分内容的解码,可以参见上述实施方式的相应描述,此处不作赘述,且可以达到相同的有益效率。

[0166] 可选的,所述方法还包括:

[0167] 所述接收端接收所述发送端发送的第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

[0168] 其中,上述第三消息可以定义为msg3,该实施方式中,通过第三消息通知接收端第二消息是否包括参数指示信息,更为具体的可以指示第二消息指示的接收器参数对于接收端是否存在接收器参数改变,这样可以实现当不存在接收器参数改变或者不包括参数指示信息时,接收端甚至可以接收第二消息,直接使用当前的接收器参数对第一消息进行解码。另外,在一些实施方式中,第三消息可以具有固定有效载荷,其中第二消息中的参数指示信息的存在或者不存在对应于第三消息中的两个不同状态。例如,第三消息有1位表示第二消息是否携带参数指示信息。

[0169] 另外,本发明实施例中,上述第三消息可以对应于一个第二消息,即一个第三消息指示一个第二消息,例如:如图5所示。且第三消息、第二消息可以是以相同的调度时间单位(例如,时隙)发送,其中图5给出了一个示例。可以以不同的调度时间单位发送的第三消息和第二消息。如果第二消息有参数指示信息,第一消息和第二消息之间可以有一个间隙。如果第二消息没有参数指示,第一消息和第二消息之间可以没有间隙。

[0170] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

[0171] 该实施方式中,可以实现通过第三消息指示多个第二消息,例如:第三消息用于指示M个时隙中的M个第二消息是否包括参数指示信息,这样可以节省消息开销。另外,上述M的值和M个第二消息的时间位置可以预定义的半静态或半持续配置的,并且对发送端和接收端均是已知的。其中,图6示出了一个例子,其中 $M=3$ 。一旦接收到第三消息,该第三消息就向接收端指示相应的M个时隙中的第二消息是否携带参数指示信息。

[0172] 另外,第三消息可以是可以在每个调度时间单位(例如slots)或在由发送端预配

置的时隙的子集(例如,具有预先配置的传输周期和偏移)中被发送。对于后一种情况,发送端可以事先向接收端指示第三消息的发生。

[0173] 可选的,本发明实施例中,目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

[0174] 这样可以实现根据发送端的第二消息灵活选择时域、频域和空域中的至少一项的接收器参数,对第一消息进行解码。优先的,所述空域的接收器参数包括所述接收端的接收波束。这样可以实现接收端根据与第一消息关联的第二消息确定接收波束,且还可以提高波束传输性能。

[0175] 需要说明的是,本发明实施例介绍的多种可选的实施方式均可以相互结合实现,也可以单独实现,对此本发明实施例不作限定。

[0176] 本发明实施例,接收端接收发送端发送的与第一消息关联的第二消息;所述接收端根据所述第二消息,确定解码所述第一消息的目标接收器参数;所述接收端根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。这样可以实现接收端根据与第一消息关联的第二消息确定接收器参数,且还可以提高消息传输性能。

[0177] 请参阅图7,图7是本发明实施例提供的另一种消息解码方法的流程图,如图7所示,包括以下步骤:

[0178] 701、发送端向接收端发送与第一消息关联的第二消息,所述第二消息用于所述接收端确定解码所述第一消息的目标接收器参数;

[0179] 702、所述发送端向所述接收端发送所述第一消息。

[0180] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0181] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认接收器参数。

[0182] 可选的,所述接收端默认的接收器参数包括:

[0183] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0184] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。

[0185] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0186] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0187] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

[0188] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和/或

[0189] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。

[0190] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前。

[0191] 可选的,所述方法还包括:

[0192] 所述发送端向所述接收端发送第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

[0193] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

[0194] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

[0195] 可选的,所述空域的接收器参数包括所述接收端的接收波束。

[0196] 需要说明的是,本实施例作为与图2所示的实施例中对应的发送端的实施方式,其具体的实施方式可以参见图2所示的实施例的相关说明,为了避免重复说明,本实施例不再赘述,且还可以达到相同有益效果。

[0197] 请参考图8,图8是本发明实施例提供一种接收端的结构图,如图8所示,接收端800包括:

[0198] 第一接收模块801,用于接收发送端发送的与第一消息关联的第二消息;

[0199] 确定模块802,用于根据所述第二消息,确定解码所述第一消息的目标接收器参数;

[0200] 解码模块803,用于根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。

[0201] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0202] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认接收器参数。

[0203] 可选的,所述接收端默认的接收器参数包括:

[0204] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0205] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。

[0206] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0207] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0208] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

- [0209] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和\或
- [0210] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。
- [0211] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前;
- [0212] 所述解码模块803用于若所述第二消息包括参数指示信息,则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者
- [0213] 所述解码模块803用于若所述第二消息包括参数指示信息,则丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者
- [0214] 所述解码模块803用于若所述第二消息包括参数指示信息,则根据默认接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者
- [0215] 所述解码模块803用于若所述第二消息不包括波束指示信息,则根据默认接收器参数对所述第一部分内容和第二部分内容进行解码;或者
- [0216] 所述解码模块803用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者
- [0217] 所述解码模块803用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者
- [0218] 所述解码模块803用于若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则根据默认接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者
- [0219] 所述解码模块803用于若所述第二消息包括参数指示字段,且所述参数指示字段指示没有参数指示信息或者没有参数改变,则根据默认接收器参数对所述第一部分内容和第二部分内容进行解码。
- [0220] 可选的,如图9所示,所述接收端800还包括:
- [0221] 第二接收模块804,用于接收所述发送端发送的第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。
- [0222] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。
- [0223] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。
- [0224] 可选的,所述空域的接收器参数包括所述接收端的接收波束。
- [0225] 需要说明的是,本实施例中上述接收端800可以是本发明实施例中方法实施例中任意实施方式的接收端,本发明实施例中方法实施例中接收端的任意实施方式都可以被本

实施例中的上述接收端800所实现,以及达到相同的有益效果,此处不再赘述。

[0226] 请参阅图10,图10是本发明实施例提供的一种发送端的结构图,如图10所示,发送端1000包括:

[0227] 第一发送模块1001,用于发送端向接收端发送与第一消息关联的第二消息,所述第二消息用于所述接收端确定解码所述第一消息的目标接收器参数;

[0228] 第二发送模块1002,用于向所述接收端发送所述第一消息。

[0229] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0230] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。

[0231] 可选的,所述接收端默认的接收器参数包括:

[0232] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0233] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。

[0234] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0235] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0236] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

[0237] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和/或

[0238] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。

[0239] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前。

[0240] 可选的,如图11所示,所述发送端还包括:

[0241] 第二发送模块1003,用于向所述接收端发送第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

[0242] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

[0243] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

[0244] 可选的,所述空域的接收器参数包括所述接收端的接收波束。

[0245] 需要说明的是,本实施例中上述发送端1000可以是本发明实施例中方法实施例中

任意实施方式的发送端,本发明实施例中方法实施例中发送端的任意实施方式都可以被本实施例中的上述发送端1000所实现,以及达到相同的有益效果,此处不再赘述。

[0246] 请参考图12,图12是本发明实施例提供的另一种接收端的结构图,如图12所示,该接收端包括:处理器1200、收发机1210、存储器1220、用户接口1230和总线接口,其中:

[0247] 处理器1200,用于读取存储器1220中的程序,执行下列过程:

[0248] 通过收发机1210接收端接收发送端发送的与第一消息关联的第二消息;

[0249] 根据所述第二消息,确定解码所述第一消息的目标接收器参数;

[0250] 根据所述目标接收器参数对所述发送端发送的所述第一消息进行解码。

[0251] 其中,收发机1210,用于在处理器1200的控制下接收和发送数据。

[0252] 在图12中,总线架构可以包括任意数量的互联的总线和桥,具体由处理器1200代表的一个或多个处理器和存储器1220代表的存储器的各种电路链接在一起。总线架构还可以将诸如外围设备、稳压器和功率管理电路等之类的各种其他电路链接在一起,这些都是本领域所公知的,因此,本文不再对其进行进一步描述。总线接口提供接口。收发机1210可以是多个元件,即包括发送机和接收机,提供用于在传输介质上与各种其他装置通信的单元。针对不同的用户设备,用户接口1230还可以是能够外接内接需要设备的接口,连接的设备包括但不限于小键盘、显示器、扬声器、麦克风、操纵杆等。

[0253] 处理器1200负责管理总线架构和通常的处理,存储器1220可以存储处理器1200在执行操作时所使用的数据。

[0254] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0255] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。

[0256] 可选的,所述接收端默认的接收器参数包括:

[0257] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0258] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。

[0259] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0260] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0261] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

[0262] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和/或

[0263] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。

[0264] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述

第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前,所述根据所述目标接收器参数对所述第一消息进行解码,包括:

[0265] 若所述第二消息包括参数指示信息,则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0266] 若所述第二消息包括参数指示信息,则丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0267] 若所述第二消息包括参数指示信息,则根据默认的接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0268] 若所述第二消息不包括波束指示信息,则根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码;或者

[0269] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0270] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则丢弃所述第一部分内容,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0271] 若所述第二消息包括参数指示字段,且所述参数指示字段包括参数指示信息,则根据默认的接收器参数对所述第一部分内容进行解码,以及根据所述参数指示信息指示的所述目标接收器参数对所述第二部分内容进行解码;或者

[0272] 若所述第二消息包括参数指示字段,且所述参数指示字段指示没有参数指示信息或者没有参数改变,则根据默认的接收器参数对所述第一部分内容和所述第二部分内容进行解码。

[0273] 可选的,处理器1200还用于:

[0274] 通过收发机1210接收所述发送端发送的第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数指示信息,则所述第二消息与所述第一消息之间不存在间隙。

[0275] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

[0276] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

[0277] 可选的,所述空域的接收器参数包括所述接收端的接收波束。

[0278] 需要说明的是,本实施例中上述接收端可以是图1-图7所示的实施例中的终端,图1-图7所示实施例中接收端的任意实施方式都可以被本实施例中的上述接收所实现,以及达到相同的有益效果,此处不再赘述。

[0279] 请参考图13,图13是本发明实施提供的另一种发送端的结构图,如图13所示,该发送端包括:处理器1300、收发机1310、存储器1320、用户接口1330和总线接口,其中:

[0280] 处理器1300,用于读取存储器1320中的程序,执行下列过程:

[0281] 通过收发机1310向接收端发送与第一消息关联的第二消息,所述第二消息用于所

述接收端确定解码所述第一消息的目标接收器参数;

[0282] 通过收发机1310向所述接收端发送所述第一消息。

[0283] 其中,收发机1310,用于在处理器1300的控制下接收和发送数据。

[0284] 在图13中,总线架构可以包括任意数量的互联的总线和桥,具体由处理器1300代表的一个或多个处理器和存储器1320代表的存储器的各种电路链接在一起。总线架构还可以将诸如外围设备、稳压器和功率管理电路等之类的各种其他电路链接在一起,这些都是本领域所公知的,因此,本文不再对其进行进一步描述。总线接口提供接口。收发机1310可以是多个元件,即包括发送机和接收机,提供用于在传输介质上与各种其他装置通信的单元。针对不同的用户设备,用户接口1330还可以是能够外接内接需要设备的接口,连接的设备包括但不限于小键盘、显示器、扬声器、麦克风、操纵杆等。

[0285] 处理器1300负责管理总线架构和通常的处理,存储器1320可以存储处理器1300在执行操作时所使用的数据。

[0286] 可选的,若所述第二消息包括参数指示信息,则所述目标接收器参数为所述参数指示信息指示的接收器参数;

[0287] 若所述第二消息不包括参数指示信息,则所述目标接收器参数为所述接收端默认的接收器参数。

[0288] 可选的,所述接收端默认的接收器参数包括:

[0289] 所述接收端当前使用的接收器参数、所述接收端接收到的时间最近的第二消息指示的接收器参数、预先定义的接收器参数或者所述接收端向所述发送端上报时间最近的发送器参数对应的接收器参数。

[0290] 可选的,所述参数指示信息显式或者隐式指示所述目标接收器参数。

[0291] 可选的,若所述参数指示信息隐式指示所述目标接收器参数,则所述参数指示信息包括所述发送端选择的发送器参数,所述接收端将预先为所述发送器参数选择的接收器参数作为所述目标接收器参数。

[0292] 可选的,若所述第二消息是在预先确定的参数切换指示集对应的调度时间单位内接收到的,则所述第二消息包括参数指示信息,且所述第二消息与所述第一消息之间存在间隙;

[0293] 若所述第二消息是在所述参数切换指示集对应的调度时间单位外接收到的,则所述第二消息不包括参数指示信息,且所述第二消息与所述第一消息之间不存在间隙。

[0294] 可选的,所述参数切换指示集对应的调度时间单位在时域上周期存在;和/或

[0295] 所述参数切换指示集对应的调度时间单位由所述发送端半静态或半持续配置,并通知所述接收端。

[0296] 可选的,所述第一消息分为时域上连续的第一部分内容和第二部分内容,且所述第一部分内容在所述第二部分内容的前面,以及所述第一部分内容与所述第二消息在时域连续,所述第二消息在所述第一部分内容之前。

[0297] 可选的,处理器1300还用于:

[0298] 通过收发机1310向所述接收端发送第三消息,所述第三消息用于指示所述第二消息是否包括参数指示信息,且若所述第三消息指示所述第二消息包括参数指示信息,则所述第二消息与所述第一消息之间存在间隙,若所述第三消息指示所述第二消息不包括参数

指示信息,则所述第二消息与所述第一消息之间不存在间隙。

[0299] 可选的,所述第三消息用于指示M个时间单位内的第二消息是否包括参数指示信息,所述M为大于或者等于1的整数,所述M个时间单位连续或者不连续。

[0300] 可选的,所述目标接收器参数包括时域、频域和空域中的至少一项的接收器参数。

[0301] 可选的,所述空域的接收器参数包括所述接收端的接收波束。

[0302] 需要说明的是,本实施例中上述发送端可以是图1-图7所示的实施例中的发送端,图1-图7所示实施例中发送端的任意实施方式都可以被本实施例中的上述发送端所实现,以及达到相同的有益效果,此处不再赘述。

[0303] 在本申请所提供的几个实施例中,应该理解到,所揭露方法和装置,可以通过其它的方式实现。例如,以上所描述的装置实施例仅仅是示意性的,例如,所述单元的划分,仅仅为一种逻辑功能划分,实际实现时可以有另外的划分方式,例如多个单元或组件可以结合或者可以集成到另一个系统,或一些特征可以忽略,或不执行。另一点,所显示或讨论的相互之间的耦合或直接耦合或通信连接可以是通过一些接口,装置或单元的间接耦合或通信连接,可以是电性,机械或其它的形式。

[0304] 另外,在本发明各个实施例中的各功能单元可以集成在一个处理单元中,也可以是各个单元单独物理包括,也可以两个或两个以上单元集成在一个单元中。上述集成的单元既可以采用硬件的形式实现,也可以采用硬件加软件功能单元的形式实现。

[0305] 上述以软件功能单元的形式实现的集成的单元,可以存储在一个计算机可读取存储介质中。上述软件功能单元存储在一个存储介质中,包括若干指令用以使得一台计算机设备(可以是个人计算机,服务器,或者网络设备等)执行本发明各个实施例所述收发方法的部分步骤。而前述的存储介质包括:U盘、移动硬盘、只读存储器(Read-Only Memory,简称ROM)、随机存取存储器(Random Access Memory,简称RAM)、磁碟或者光盘等各种可以存储程序代码的介质。

[0306] 以上所述是本发明的优选实施方式,应当指出,对于本技术领域的普通技术人员来说,在不脱离本发明所述原理的前提下,还可以作出若干改进和润饰,这些改进和润饰也应视为本发明的保护范围。

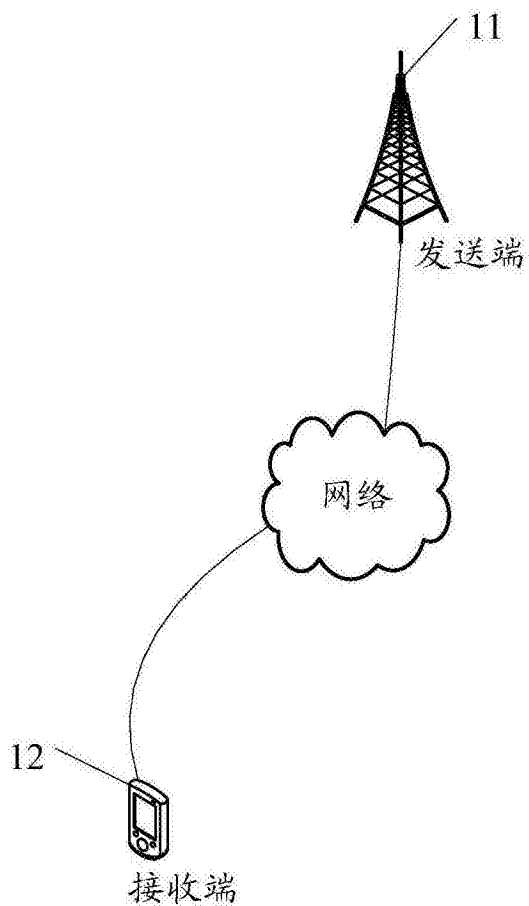


图1

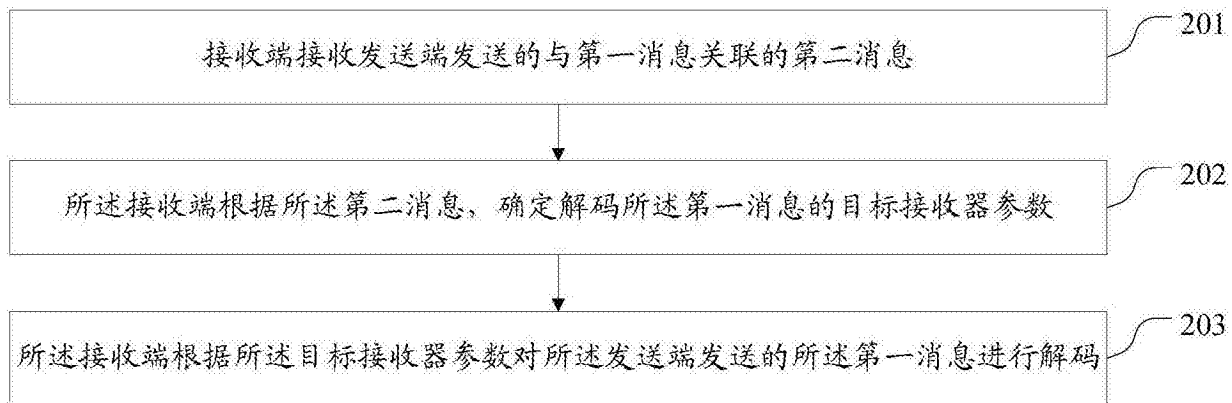


图2

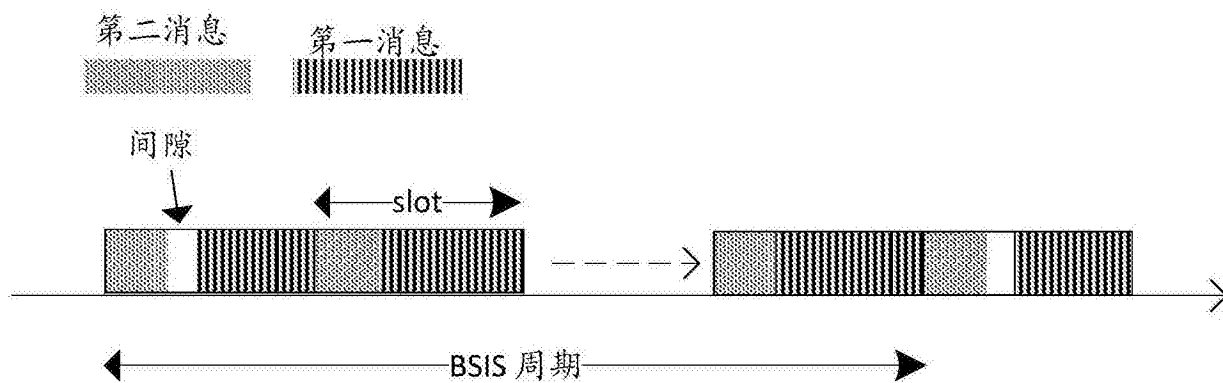


图3

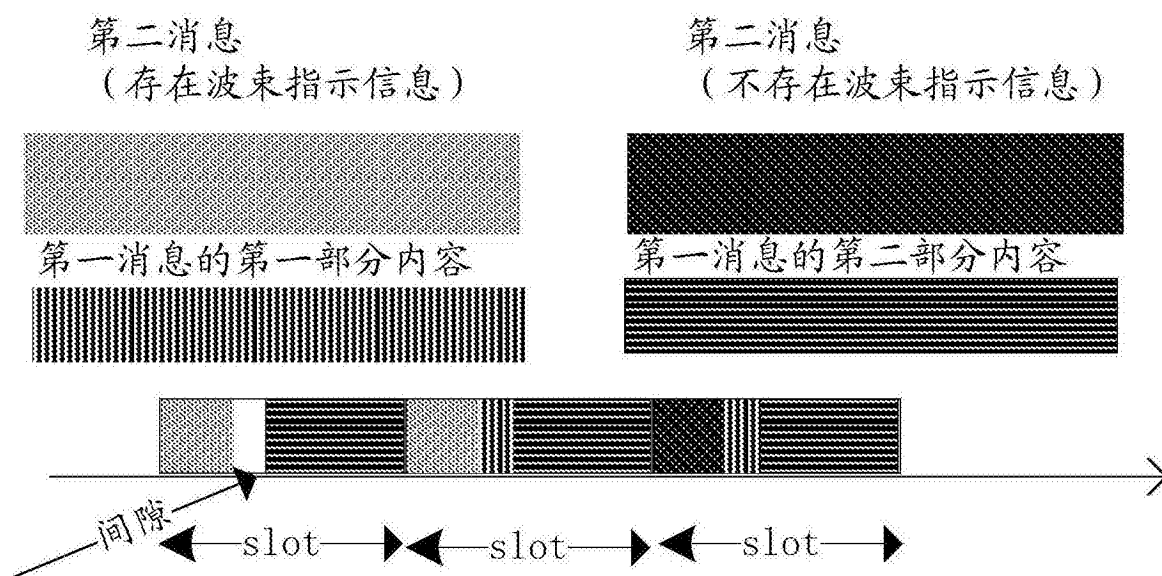


图4

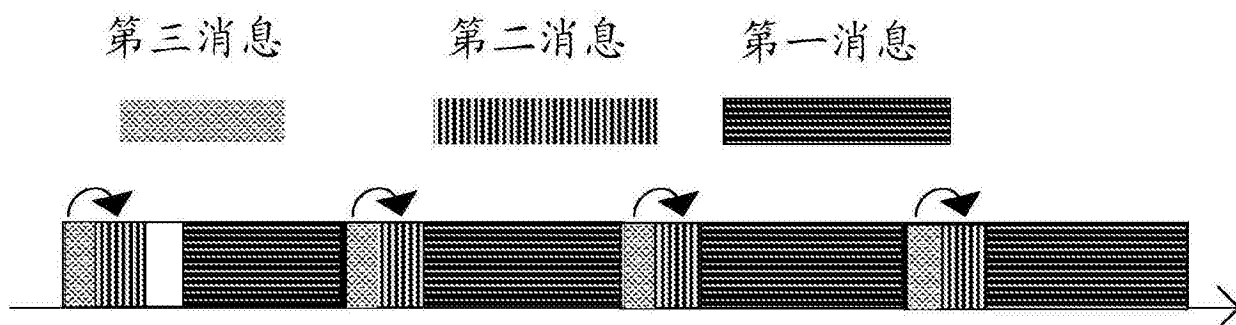


图5

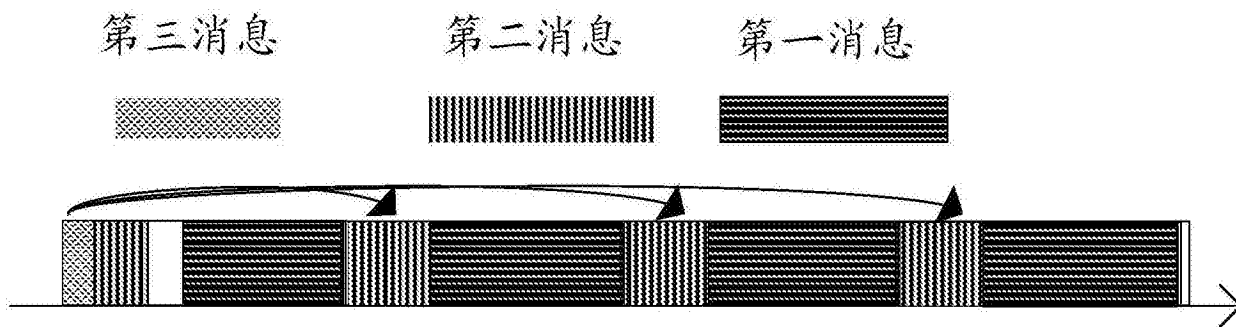


图6

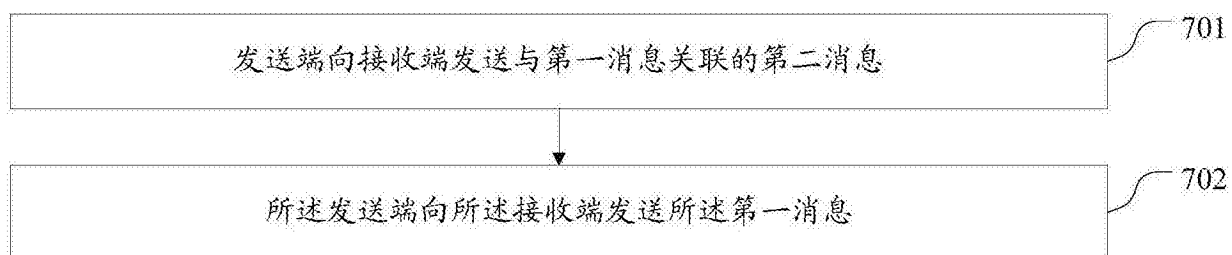


图7

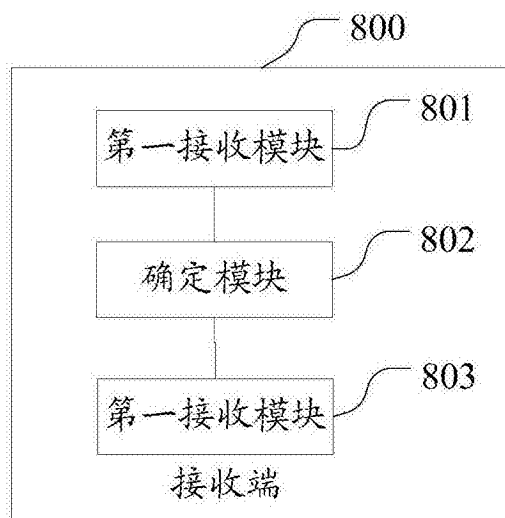


图8

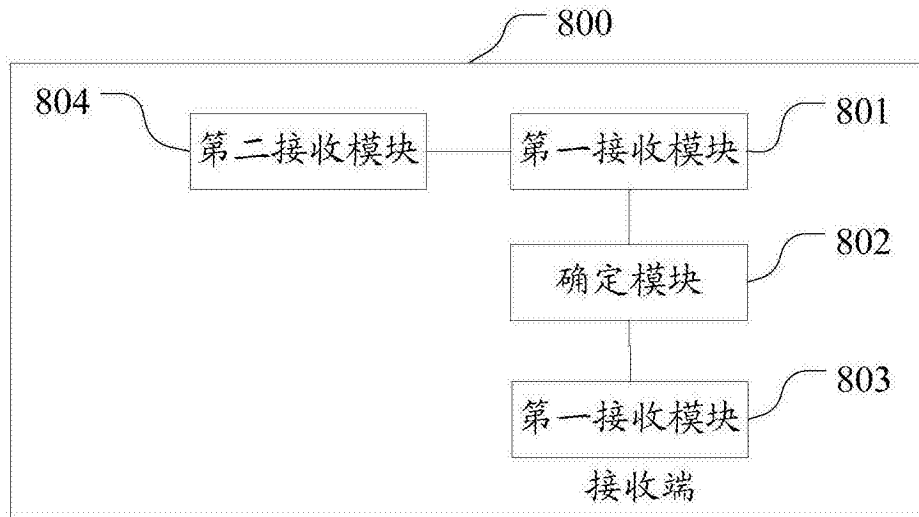


图9

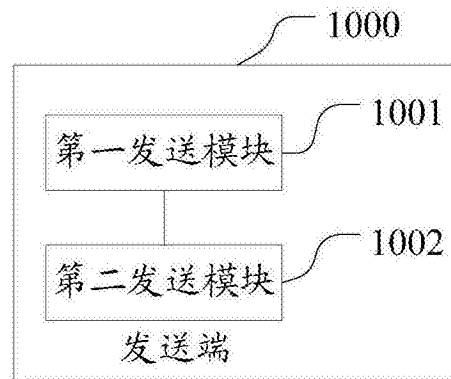


图10

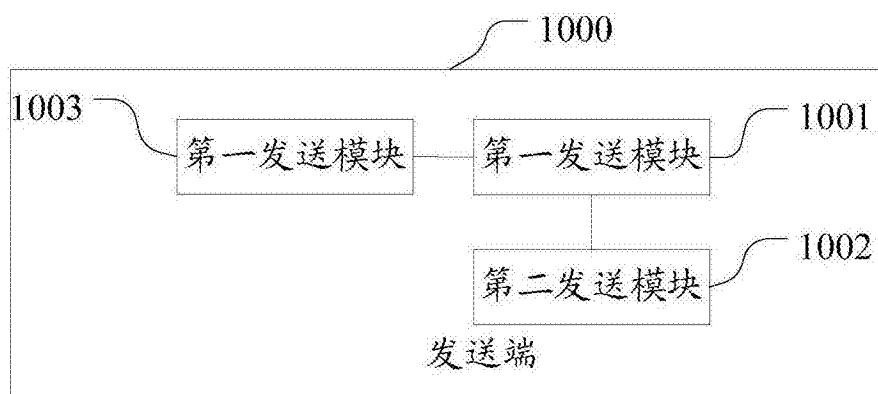


图11

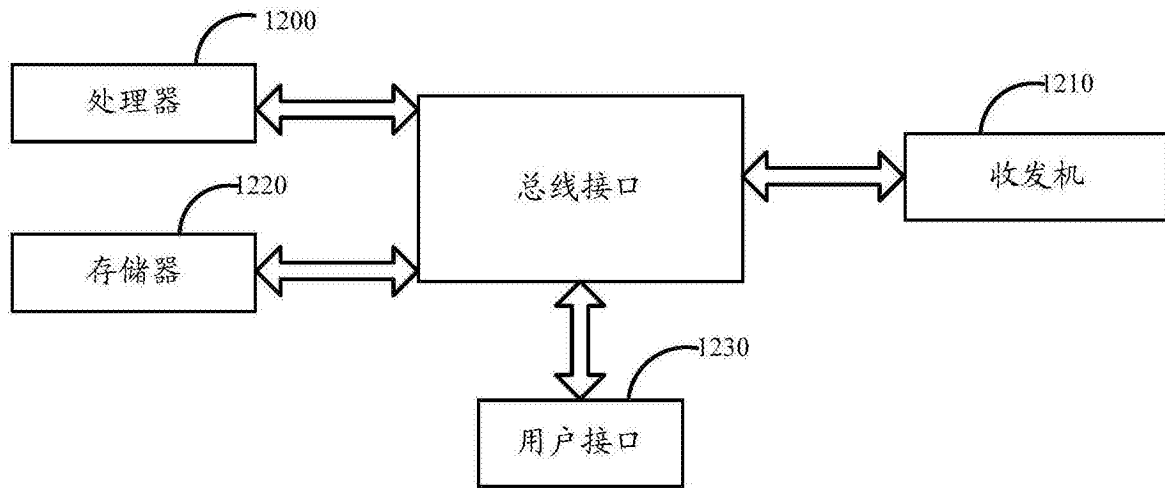


图12

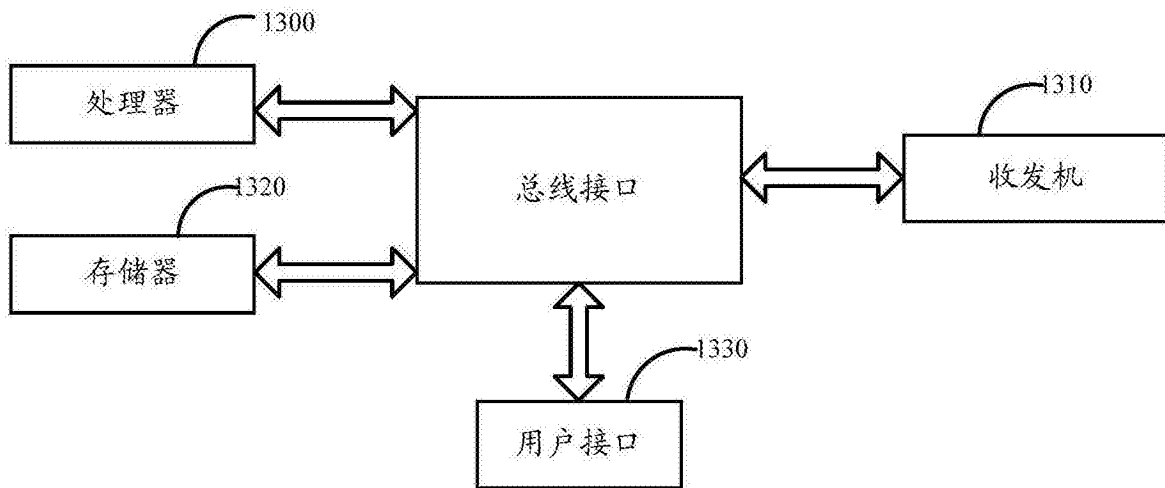


图13