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Kinetics (physics)

In physics and engineering, **kinetics** is the branch of classical mechanics that is concerned with the relationship between the motion and its causes, specifically, forces and torques.^{[1][2][3]} Since the mid-20th century, the term "dynamics" (or "analytical dynamics") has largely superseded "kinetics" in physics textbooks,^[4] though the term is still used in engineering.

In plasma physics, kinetics refers to the study of continua in velocity space. This is usually in the context of non-thermal (non-Maxwellian) velocity distributions, or processes that perturb thermal distributions. These "kinetic plasmas" cannot be adequately described with fluid equations.

The term *kinetics* is also used to refer to chemical kinetics, particularly in chemical physics and physical chemistry.^{[5][6][7][8][9]} In such uses, a qualifier is often used or implied, for example: "physical kinetics", "crystal growth kinetics", and so on.

References

- 1 kinetics (<http://www.britannica.com/EBchecked/topic/318197/kinetics>) Encyclopædia Britannica Online.
2. Louis Adolphe Martin (1907). *Text-book of Mechanics* (<https://books.google.com/books?id=Pr43A-AAAMAAJ&pg=PA67>) Wiley p Section X, pp 69ff
3. *Kinetics* must not be confused with *kinematics*, the study of motion without consideration of the physical circumstances causing it (see, e.g., Edmund Taylor Whittaker (1988). *A Treatise on the Analytical Dynamics of Particles and Rigid Bodies* (Reprint of the Fourth Edition of 1936 with a foreword by William McCrea ed.). Cambridge University Press. p. Chapter 1. ISBN 0-521-35883-3.), which is a separate branch of classical mechanics.
- 4 See [this discussion](#)
5. Lifshitz, E. M.; Pitaevskii, L. P.; Sykes, J. B.; Franklin, R.N. (1981). *Physical Kinetics*. Butterworth-Heinemann. ISBN 0-7506-2635-6.
- 6 Alexeev, Boris V ; Alexeev (2004) *Generalized Boltzmann Physical Kinetics* Elsevier ISBN 0 444-51582-8.
7. Gorelik, G. E.; N. V. Pavlyukevich; V. V. Levdansky; V. G. Leitsina; G. I. Rudin (1995). *Physical Kinetics and Transfer Processes in Phase Transitions* Begell House ISBN 1 56700 044 4
8. Krainov, Vladimir P.; Kevin Hendzel (1992). *Qualitative Methods in Physical Kinetics and Hydrodynamics*. Springer. ISBN 0-88318-953-4.
- 9 American Chemical Society, Division of Physical Chemistry (1976) *Evolution of Kinetics A Centennial Symposium of the Division of Physical Chemistry, American Chemical Society*. American Chemical Society.

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