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Joshua W. Phinney, Ph.D., P.E.
Principal Engineer

Professional Profile

Dr. Joshua W. Phinney is a Principal Engineer in Exponent's Electrical Engineering and Computer Science practice. Dr. Phinney's background is in electrical and electronic engineering, particularly related to power electronics, electromagnetics, and electromechanics. His specialties include power supplies, radio-frequency electronics, control systems, printed circuits, integrated-circuit packaging, magnetics design, and power transmission and distribution. He has related experience in embedded software, acoustics, and numerical methods for optimization and simulation.

At Exponent, Dr. Phinney has assisted clients with identifying the root cause of failures in mobile electronic devices, industrial and automotive controllers, capacitors, transformers, amplifiers, and power supplies. He has testified in patent and trade secret litigation regarding computer hardware and software, audio circuitry, mobile telephones, tablets, power supplies, control systems, hard disk drives, and electronic instruments. In addition, Dr. Phinney has assisted clients with electromagnetic assessment issues pertaining to utility and communication infrastructure. These issues include permitting, interference, and environmental impact of radar, AC and HVDC transmission lines, substations, photovoltaic installations, generators, broadcast antennas, and electrified mass transit systems. In addition, Dr. Phinney has written software for data classification and machine learning in radar-return and other image-analysis applications.

Dr. Phinney received his Ph.D. in Electrical Engineering from the Massachusetts Institute of Technology. His doctoral work centered on miniaturization of power converters and electromechanical power conversion. He has related experience in radio-frequency electronics (particularly phase-locked loops and RF amplifiers), network synthesis, system identification, and control. Dr. Phinney is the co-inventor on patents for improving the performance of capacitors, EMI filters, and common-mode chokes.

Academic Credentials and Professional Honors

Ph.D., Electrical Engineering, Massachusetts Institute of Technology, 2005
S.M., Electrical Engineering, Massachusetts Institute of Technology, 2001
B.S., Electrical Engineering, University of Illinois at Chicago (*summa cum laude*), 1999
B.A., Ancient and Classical Languages, Philosophy, Wheaton College, 1995

2004 IEEE Power Electronics Society Transactions Prize Paper Award (for the paper "Filters with Active Tuning for Power Applications"); 2003 William M. Pormoy Prize Paper Award (Awarded by the Power Electronics Devices and Components Committee of the IEEE Industry Applications Society)

1993-1994 Lawrence Livermore National Laboratory, Nuclear Chemistry Division. Associated Western Universities internship: Neural-network classification of gamma-ray detector events.

Work History

2005-*present* Exponent, Inc.

Licenses and Certifications

Registered Professional Electrical Engineer, New York, #084129

Languages

German

Patents

U.S. Patent No. 7,242,269: Filter Having Parasitic Inductance Cancellation, July 2007 (with D.J. Perreault and T.C. Neugebauer).

U.S. Patent No. 6,937,115: Filter Having Parasitic Inductance Cancellation, February 2002 (with D.J. Perreault and T.C. Neugebauer).

Publications

Phinney JP, Perreault DJ, Lang JH. Synthesis of lumped transmission-line analogs. IEEE Transactions on Power Electronics 2007; 22(4):1531–1542.

Phinney JP, Perreault DJ, Lang JH. Radio-frequency inverters with transmission-line input networks. IEEE Transactions on Power Electronics 2007; 22(4):1154–1161.

Phinney JP, Perreault DJ, Lang JH. Multi-resonant microfabricated inductors and transformers. IEEE Power Electronics Specialists Conference 2004; 4527–4536.

Phinney JP, Perreault DJ. Filters with active tuning for power applications. IEEE Transactions on Power Electronics 2003; 18(2):636–647.

Neugebauer TC, Phinney JP, Perreault DJ. Filters and components with inductance cancellation. IEEE Transactions on Industry Applications 2002; 939–947.

Phinney JP, Perreault DJ. Filters with active tuning for power applications. IEEE Power Electronics Specialists Conference 2001; 363–370.

Batzer MA, Arcot SS, Phinney JP, et al. Genetic variation of recent Alu insertions in human populations. Journal of Molecular Evolution 1996; 42(1):22–29.

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IPR2024-00023

Academic Appointments

Adjunct Professor, Hofstra University, 2008-2018

Peer Reviewer

- IEEE Transactions on Power Electronics, 2013-2015
- Health Physics Journal, 2007
- IEEE Power Electronics Letters, 2006
- Power Electronics Specialists Conference, Recife, Brazil, 2005
- Power Electronics Specialists Conference, Jeju, Korea, 2006

Professional Affiliations

- Institute of Electrical and Electronic Engineers (member)
- Tau Beta Pi