

# Electric Power and Power Electronics Institute

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## WEEKLY SEMINAR SERIES – SPRING 2014

Wednesday, Feb. 25<sup>th</sup>, 2014, 3:00 – 3:50 p.m., ETB 1003

### A GUIDE TO REDUCING ENERGY CONSUMPTION IN DATA CENTERS

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**Abstract:** Computer servers have reached a point where the cost of electricity over the life of a server is greater than the cost of the server itself. This motivates a reexamination of the system paradigm used in data centers. This talk presents an overview of the power delivery system in today's data centers and highlights many of the common sources of excess energy consumption. Several emerging approaches to powering servers are compared. Differential power processing enables over 99% energy efficiency but may encourage rethinking software design and management. Future computing systems will demand an informed, interdisciplinary approach to tackle the energy challenge. Other applications of differential power processing such as solar photovoltaic energy conversion and LED lighting will also be discussed.

#### Biography

Pradeep Shenoy is a lead energy systems engineer at Texas Instruments in the DC Solutions business unit. He previously worked in TI Kilby R&D Lab, TI Systems and Applications R&D Lab, and Caterpillar's Electric Power Division.

Pradeep was the vice chair of the IEEE PES/PELS Joint Student Chapter at the University of Illinois in 2009–2010 and the co-chair of the 2011 IEEE Power and Energy Conference at Illinois. He previously served as the PELS Student Liaison and is currently the PELS Young Professionals Chair.

He participated in the US National Science Foundation's East Asia and Pacific Summer Institutes program doing research at Tsinghua University, Beijing, China in 2007. He was awarded the Camras scholarship and a Foreign Language and Area Studies fellowship. He received the Illinois International Graduate Achievement Award in 2010, was a finalist for the Lemelson-MIT Illinois Student Prize for innovation in 2012 and the Jack Kilby Innovation Award in 2014.

Pradeep received a B.S. degree in electrical engineering from the Illinois Institute of Technology in Chicago, and his M.S. and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana-Champaign.