

University of Southern California

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**DANIEL J. EPSTEIN DEPARTMENT OF  
INDUSTRIAL AND SYSTEMS ENGINEERING**

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**EPSTEIN INSTITUTE SEMINAR • ISE 650 SEMINAR**

# ***Why Study Complex Networks***

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University Park, PA 16802, USA**

## **ABSTRACT**

The last decade has seen an explosion of research in network science, a science whose initial work and subsequent developments are grounded in statistical physics applied to natural systems. The field of Complex networks has become an important area of research in many disciplines. In recent years, researchers in the engineering discipline have also taken a keen interest in complex networks, which has resulted in several application areas being investigated in engineering. Due to the connectivity, reach and pervasiveness offered by IT and embedded systems, networks are going to be much more prevalent in the future. In this talk, we will briefly explore the foundations of network science and some relevant applications in web service composition, healthcare and computer virus heredity and provenance detection. We will conclude with some important research problems.

**TUESDAY, FEBRUARY 15, 2011  
ELECTRICAL ENGINEERING BUILDING (EEB) ROOM 248  
3:30 – 4:50 PM**

## **BRIEF BIO**

Dr. Kumara is the Allen, E and Allen, M. Pearce Professor of Industrial Engineering at the Pennsylvania State University. He also holds joint appointments with Computer Science and Engineering, and an affiliate appointment with the School of Information Sciences and Technology. He holds an adjunct position with C.R. Rao Institute of Advanced Mathematics, Statistics and Computer Science, University of Hyderabad, India. His research interests are in studying chaos in physical systems, sensor data fusion, sensor networks and large scale complex networks. He got his Ph.D., from Purdue University. He is an elected Fellow of the International Academy of Production Research (CIRP) and the Institute of Industrial Engineers (IIE). Dr. Kumara has won several awards at Penn State including the Graduate Faculty Teaching Award, University Faculty Scholar Medal, and Penn State Engineering Society- Premier Research Award. His publications have appeared in IIE Transactions, ASME Transactions, IEEE Transactions, Applied Mathematics, Physics Reviews, and Sensor Networks.