# EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

Emission Modeling and Control on Dynamic Transportation Networks

ABSTRACT – Transportation is increasingly critical to the mobility and sustainability of our society, especially for large urban areas. Congestion and emissions/energy use are two main concerns of urban transportation systems. This research focuses on developing a pricing framework to model and control congestion and emissions (or fuel consumption) on a dynamic transportation network. Main findings of the research include: (i) certain monotonicity property of emission functions are crucial for the modeling and analysis of dynamic transportation network emissions; and (ii) free-flow optimal traffic state, i.e., no congestion in the network, are particularly useful for designing optimal pricing schemes to minimize congestion and emissions in a dynamic transportation network. Discussions are also presented about how to potentially achieve and sustain the (optimal) free-flow state in a traffic network.
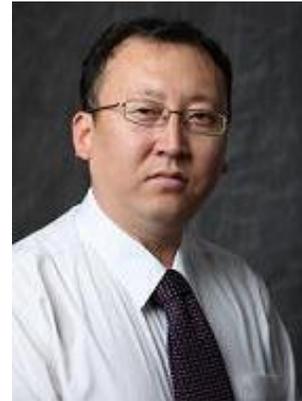
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SPEAKER BIO – Dr. Xuegang (Jeff) Ban is an Associate Professor of the Civil and Environmental Engineering Department of Rensselaer Polytechnic Institute (RPI). He received his B.S. and M.S. in Automobile Engineering from Tsinghua University, and his M.S. in Computer Sciences and Ph.D. in Transportation Engineering from the University of Wisconsin at Madison. His research interests are in Transportation Network System Modeling and Simulation, Urban Traffic Modeling and Control, Intelligent Transportation Systems (ITS), and Connected/Automated Vehicles. He has published about 50 papers in refereed journals or as book chapters, and more than 40 papers in refereed conference proceedings. Dr. Ban is an Associate Editor of Journal of Intelligent Transportation Systems, Networks and Spatial Economics, and Transportmetrica B, and serves on the editorial board of Transportation Research, Part B & Part C. He is a member of the Network Modeling Committee (ADB30) and a member of the Vehicle-Highway Automation Committee (AHB30) of the Transportation Research Board (TRB), under the National Academies. He also served as the Elected Vice Chair (2010-2011) and Chair (2012-2013) of the ITS SIG (cluster) under the Transportation Science and Logistics (TSL) Society of INFORMS. Dr. Ban received the 2011 CAREER Award from the National Science Foundation (NSF), the New Faculty Award from the Council of University Transportation Centers (CUTC) and the American Road & Transportation Builders Association (ARTBA) in 2012, and the School of Engineering Research Excellence Award (for Junior Faculty) from RPI in 2014.

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TUESDAY, OCTOBER 6, 2015
3:30PM – 4:50PM
USC ANDRUS GERONTOLOGY CENTER (GER), ROOM 206