



TEXAS A&M UNIVERSITY

Department of Electrical
& Computer Engineering

TRANSFORMING ENGINEERING EDUCATION

ENERGY & POWER GROUP SEMINAR

Optimal Incentivization Strategies for Charging Control of Electric Vehicles in Electricity Distribution Grids considering Dynamical Stability Constraints

Abstract

Significant amount of research has been done on how charging of EVs should be priced in a cost-effective way to facilitate grid operations. However, one question that is still unclear is: how does massive-scale EV charging impact the dynamics of the distribution grid, and can pricing help in smoothing of EV loads so that both small-signal and voltage stability margins of the grid can be improved? In this talk, I will present an optimal control design to answer the above question in light of understanding how high charging demands from EV customers may cause dynamical instability, and how price incentivization, charging setpoints, and optimal controllers for the EV converters can all be co-designed to minimize the risk of these instabilities.



Aranya Chakraborty

Professor
Electrical & Computer Engineering
North Carolina State University

Friday, April 25th

11:30 am

241 ZACH

Biography

Aranya Chakraborty is a professor and the associate department head for research in the Electrical and Computer Engineering department at North Carolina State University. His research interests are at the intersection of power systems and controls systems. He received the NSF CAREER award in 2011, and was named a university faculty scholar by NC State Provost office in 2019. From 2020 to 2023, Aranya served as a program director at NSF where he managed various research portfolios on power and energy systems. He is a Fellow of IEEE.

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