

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: <https://cde.nus.edu.sg/ece>

Area: Power and Energy Systems

Host: Associate Professor Panda, Sanjib Kumar

Guest lecture

TOPIC	:	Stability Assessment of Inverter-based Resources Integrated Power Grids
SPEAKER	:	Dr. Diptak Pal Research Fellow Electrical Machines and Drives Laboratory Department of Electrical and Computer Engineering National University of Singapore
DATE	:	Tuesday, 14 Feb 2023
TIME	:	7.00PM to 9.00PM
VENUE	:	Block E1-06-03 College of Design and Engineering, NUS

ABSTRACT

The dynamic behavior of the conventional power systems is undergoing a paradigm shift due to the increasing penetration of inverter-based resources (IBRs) primarily interfacing renewable energy systems. In classical power systems, the dynamical interactions among multiple components were mainly in electromechanical time scale. However, the IBRs consist of switching devices such as IGBTs, etc. in physical layer, and control loops such as phase-locked loop, dc-bus voltage control loop, current control loop, etc. in the control layer whose interactions are predominantly in electromagnetic time scale. Therefore, the methodologies that need to be adopted for assessing the stability of IBRs integrated power grids will be discussed in this guest lecture. The techniques that are required for analyzing the small-signal as well as transient stability of IBRs operating in grid-tied as well as islanded mode will be discussed. Additionally, case studies will be presented to replicate some real-world sub-synchronous oscillations events that have been observed by system operators in various locations across the globe.

BIOGRAPHY

Diptak Pal received the B. Tech degree in electrical and electronics engineering from National Institute of Technology Tiruchirappalli, India, in 2018, and the Ph.D. degree from the department of electrical engineering, Indian Institute of Technology Delhi, India, in 2022, under the Prime Minister's Research Fellowship (PMRF) scheme. He is currently working as a Research Fellow with the department of electrical and computer engineering at National University of Singapore, Singapore. His research interests include Dynamics and Control of Inverters-integrated Power Systems, Stability and Control of Inverter-based Resources, Coordinated Control and Protection of Active Distribution Networks, and Adaptive and Data-driven control of Networked Systems.

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