

# DEPARTMENT OF MECHANICAL & AEROSPACE ENGINEERING

## WILLIAM MAXWELL REED SEMINAR SERIES

### “Stabilization and Source Seeking of Underactuated Vehicle Networks”

**Bo Wang, Ph.D.**

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The City College of New York**

#### **Abstract:**

This presentation mainly introduces a novel Extremum Seeking Control (ESC) method and explores its application in underactuated vehicle systems. The ESC-based controller stands out for its independence from position or velocity measurements of the vehicle. Instead, it relies only on real-time tracking of the source signal related to the current position. As a result, it proves highly adaptable to structure-free environments or areas lacking GPS or INS measurements. Potential use cases encompass distance-based positioning, avalanche victim search, and chemical/gas leak detection, among others.

#### **Speaker Bio:**

Bo Wang is an Assistant Professor of Mechanical Engineering at The City College of New York. He received the Master of Science (MSc.) degree in Control Theory and Engineering from the University of Chinese Academy of Sciences, China, in 2018, and the Ph.D. degree in Mechanical Engineering from Villanova University in 2022. After receiving his Ph.D., he was a postdoctoral fellow at the University of Illinois Urbana-Champaign. His research interests include nonlinear control theory (robust, adaptive, and passive), underactuated systems, nonholonomic systems, geometric control theory, networked control systems, extremum seeking control, learning-based control, and robotics.

**Date: Friday, April 19, 2024**  
**Place: Whitehall Classroom Building 110**

**Time: 3:00 PM EST**  
**Contact: Dr. Jonathan Wenk**

Attendance open to all interested persons