

# 249th WPI-IIIS Seminar

## Fast Closed-Loop Brain Interfaces for Tomorrow's Therapies

This seminar explores how closed-loop brain-computer interfaces are moving from algorithms and simulations toward clinically viable systems that can sense brain activity and adapt stimulation in real time for neurological and psychiatric disorders. It will introduce advances in neural decoding (such as LFADS-based low-dimensional dynamics), realistic simulations, and energy-efficient implementations (including quantized models and FPGA-based hardware) that lay the groundwork for future bedside BCIs, while highlighting current technical and regulatory limitations, the need for rigorous clinical trials, and emerging Cross-Pacific collaborations on multimodal sleep diagnosis.



**Dr. Shih-Chieh Hsu**

Nuclear & Particle Experiment,  
University of Washington

Date: **Wednesday, January 21, 2026**  
Time: **12:00 – 13:00**  
Venue: **1F Auditorium, IIIS Building**

\* On-site participation only



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