# Seminar : Dr. Zheshen Zhang
## Department of Electrical and Computer Engineering
## University of Michigan, Ann Arbor (USA)

**Friday December 12th, 2025 at 13h30**
**LMOPS, CentraleSupélec, 2 rue E. Belin, Metz**
**Salle du conseil**

## *Quantum Measurement and Sensing Enhanced by AI and Entanglement*



Artificial intelligence (AI) has transformed the modalities of information processing. In this talk, I will discuss how AI and entanglement join forces to approach or surpass the fundamental limits of measurement and sensing. I will introduce quantum receiver enhanced by adaptive learning (QREAL) designed by machine learning and further equipped with transfer learning at a physical layer to demonstrate a consistent performance beyond the standard quantum limit in decoding quantum states and parameter estimation. I will next elaborate on AI-assisted quantum engineering that addresses more complex distributed sensing problems. Before closing, I will present our quantum testbed on the cloud and ultra-low-loss quantum photonic integrated circuits as two major quests for scalable, interoperable, and accessible quantum information processing systems.

Bio: Zheshen Zhang is an Associate Professor of Electrical and Computer Engineering in the Department of Electrical Engineering and Computer Science. Dr. Zhang received a PhD degree from Georgia Tech in 2011 and a BS degree from Shanghai Jiao Tong University in 2006. Prior to joining Michigan as an Associate Professor in 2022, he was an Assistant Professor at the University of Arizona (2017-2022), a Research Scientist at MIT (2015-2017), and a Postdoctoral Associate at MIT (2012-2015). Dr. Zhang's research encompasses a broad swath of the experimental and theoretical aspects of quantum networks, quantum communications, quantum sensing, and quantum computing. Dr. Zhang received an NSF CAREER Award in 2022 for his work on quantum machine learning. He is currently an Editorial Board Member of *Communications Physics*, Nature Portfolio and an Editor of *Progress in Quantum Electronics*, Elsevier.

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