

Seminar On

THz Time-Domain Spectroscopy and Meta-Devices

Professor Quan Xu

Associate Professor

School of Precision Instruments and Optoelectronics Engineering

Tianjin University

Date : 16 December 2025 (Tuesday)

Time : 11:00 am – 12:00 nn

**Venue : Room 15-202, 15/F, State Key Laboratory of Terahertz and Millimeter Waves,
Lau Ming Wai Academic Building, City University of Hong Kong**

Abstract

Terahertz waves, situated between infrared and microwave regions in the electromagnetic spectrum, exhibit significant application value in security screening, radar systems, and particularly next-generation wireless communications. The invention of terahertz time-domain spectroscopy (THz-TDS) in the late 20th century has revolutionized terahertz research by enabling comprehensive broadband amplitude and phase characterization through Fourier transforms of picosecond-scale terahertz pulses. Concurrently, the rise of metamaterial and metasurface studies in the early 21st century has established meta-optics as a transformative field, providing unprecedented platforms for functional terahertz device design. This presentation highlights the Center of Terahertz Waves at Tianjin University's dual contributions: 1) Advancing THz-TDS technology through commercialization of customizable systems and pioneering integrations with photoacoustic techniques and asynchronous optical sampling; 2) Developing terahertz meta-devices including free-space components (polarizers, waveplates, lenses, gratings, holographic plates) and on-chip integrated systems (waveguides, couplers, multiplexers/demultiplexers, frequency-division multiplexers).

Biography

Dr. Xu is currently an Associate Professor at the School of Precision Instruments and Optoelectronics Engineering, Tianjin University. He obtained his Ph.D. degree from Tianjin University in 2019, during which he conducted research visits to King Abdullah University of Science and Technology in Saudi Arabia and the University of Birmingham in the United Kingdom. His research focuses on terahertz photonics and terahertz meta-devices. Currently, he serves as a Youth Editorial Board Member for Research and Infrared and Laser Engineering.

***** ALL ARE WELCOME *****

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