

SEMINAR ANNOUNCEMENT

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

Area: Microelectronic Technologies & Devices (MTD)

Host: Assoc Prof Aaron James Danner

TOPIC	:	Optical Frequency Combs for Advanced Spectroscopy
SPEAKER	:	Prof Irina Kabakova Professor, Optical Physics, School of Mathematical and Physical Sciences, University of Technology Sydney
DATE	:	Friday, 18 September 2026
TIME	:	11:00AM-12:00PM
VENUE	:	E1-06-01

ABSTRACT

The 2005 Nobel Prize in Physics was awarded for the development of the Optical Frequency Comb (OFC), a specialised category of laser source which serves as a powerful measurement tool in precision metrology. In recent decades, these sources have demonstrated considerable potential for use as “optical rulers”, providing an absolute frequency reference with unrivalled long-term accuracy and stability; making them ideal candidates for advanced spectroscopy. In this presentation, I will talk about two applications of OFCs: 1) for calibration of astrophotonic spectrographs and discovery of new planets, and 2) for enhancing Brillouin light scattering process that has a strong potential in fast Brillouin imaging. The motivation, challenges, and opportunities for using chip-based OFCs will conclude the presentation.

BIOGRAPHY

Dr Irina Kabakova is a professor of optical physics at the University of Technology Sydney. She has previously held various positions at the University of Sydney, FOM Institute AMOLF in Amsterdam, and Imperial College London. Currently, she is a Chief Investigator in the ARC Centres of Excellence in Quantum Biotechnology (QUBIC) and Optical Microcombs for Breakthrough Science (COMBS) where she is running activities in developing novel label-free optical microscopies and sensing. She has been a recipient of 2022 Mid-Career Scientist of the Year Award by Australian and New Zealand Optical Society and became a finalist of Australian National Measurement Institute Impact Award in 2024.



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