



Department of
Mechanical Engineering
The University of Hong Kong



SEMINAR

Lasing and light-matter interaction at the nanoscale

Date: 27 November, 2023 (Monday)
Time: 11:00 a.m.
Venue: Room 7-34, Haking Wong Building
HKU

Speaker: Professor Ren-Min Ma
Peking University
China



Abstract:

The invention of the laser has greatly advanced modern science and technology, and recently, microscale lasers have emerged as a cornerstone of modern information technology. In this talk we review the background, underlying physics, and development of laser miniaturization while also discussing the intriguing light-matter interaction and diverse applications of lasers at the nanoscale.

References:

- [1] Twisted lattice nanocavity with theoretical quality factor exceeding 200 billion. *Fundamental Research* 3, 537-543 (2023)
- [2] Magic-angle lasers in nanostructured moiré superlattice. *Nature Nanotechnology* 16, 1099-1105 (2021)
- [3] Stable, high-performance sodium-based plasmonic devices in the near infrared. *Nature* 581, 401-405 (2020)
- [4] Revealing the missing dimension at an exceptional point. *Nature Physics* 16, 571-578 (2020)
- [5] A high-performance topological bulk laser based on band-inversion-induced reflection. *Nature Nanotechnology* 15, 67-72 (2020)
- [6] Applications of Nanolasers. *Nature Nanotechnology* 14, 12-22 (2019)

Biography:

Dr. Ren-Min Ma, professor of physics, Peking University. Dr. Ma received his PhD degree in Physics from Peking University in 2009. He was a postdoc researcher at UC Berkeley during 2009 to 2014 before joining Peking University as a faculty. His research interests include laser physics, nanophotonics, light-matter interaction, non-Hermitian and topological photonics. He published over 70 peer reviewed papers, including 3 in Science/Nature, 11 in Science/Nature sub-journals, 2 in PRL. His works has been selected as China's Top 10 Optical Breakthroughs of 2018 and 2020, APS Physics Top 10 "Highlights of the Year" of 2018, China's Top 10 Semiconductor Research Breakthroughs of 2020, and Top 100 high impact research articles of China 2020. He has received China National Funds for Distinguished Young Scientists, Xplorer Prize and Wang Da-Heng Optics Prize etc. He has made over 100 invited, keynote and plenary presentations at APS March Meeting, CLEO, Nature Conference, MRS, Gordon Research Conference and other conferences.

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. X.B. Yin at 3910 2659.