

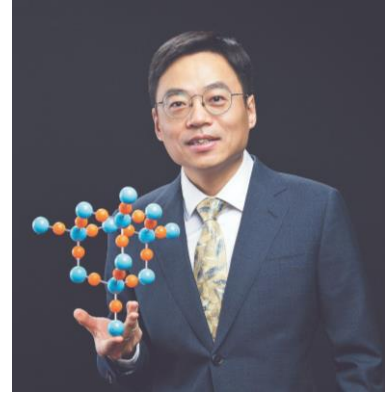


Topological-cavity surface-emitting laser (onsite and online)

Seminar jointly organized by the Department of Mechanical Engineering and the Department of Physics

Date: 6 March, 2023 (Monday)
Time: 11:00 a.m. (Hong Kong Time)
Venue: CPD-LG.63, Centennial Campus, HKU

Speaker: Prof. Ling Lu
Institute of Physics,
Chinese Academy of Sciences,
Beijing, China



Abstract:

Contrary to the perception that Nobel-winning topological physics has not found useful applications, we show that the textbook design of daily-life semiconductor lasers is equivalent to standard topological models in 1D. By upgrading to the 2D vortex zero modes, we invent topological-cavity surface-emitting lasers (TCSEL) whose performance far exceeds that of their commercial counterparts. Finally, we demonstrate the monopole cavity in 3D with the optimal single-mode behaviours, completing the kink-vortex-monopole trilogy of topological defect modes.

Nature Nanotechnology 15, 1012 (2020)

Nature Photonics 16, 279 (2022) TCSEL.com

arXiv. 2210.09056

Biography:

Ling Lu is a group leader in the Institute of Physics, Chinese Academy of Sciences, Beijing China. He obtained his bachelor's in Physics from Fudan University and a Ph.D. in Electrical Engineering from the University of Southern California where he worked on photonic crystal nanocavity lasers. He was a postdoc at Massachusetts Institute of Technology, where he coined "topological photonics" and discovered "Weyl points". He was awarded the Chen Ning Yang Award by the Asian Pacific Societies, the Highly Cited Researchers by Clarivate Web of Science, and the Distinguished Young Scientists program by the Natural Science Foundation of China.

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. Nicholas Fang at 3917 2639.