

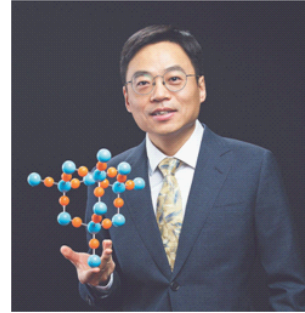
Topological-cavity Surface-emitting Laser

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Abstract— We show that the textbook design of daily-life semiconductor single-mode lasers are equivalent to standard topological models in 1D. By upgrading to the 2D vortex zero mode, we invent the topological-cavity surface-emitting lasers (TCSEL) whose performance far exceeds that of the commercial counterparts.

Ling Lu is a group leader in the Institute of Physics, Chinese Academy of Sciences, Beijing China. He obtained his bachelor in Physics from Fudan University, and a Ph.D. in Electrical Engineering from 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 Natural Science Foundation of China.



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