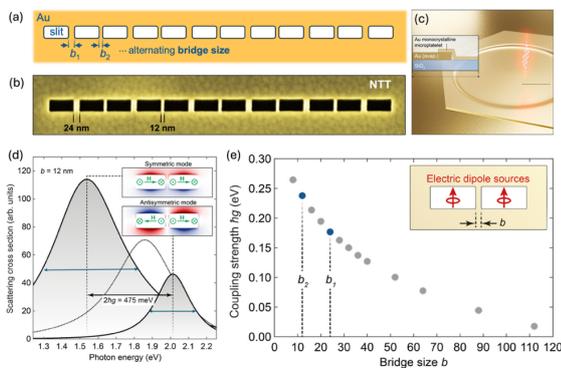


PhD opportunity

“Topological Plasmonic Devices: Using Radiative-Loss Engineering to exploit PT-Symmetry and Exceptional Points in SSH Chains”

Nano-Optics group
Chair of Experimental Physics 5 &
Cluster of Excellence ct.qmat

The Nano-Optics group (Chair Experimental physics 5) at the University of Würzburg seeks excellent candidates for a PhD position in the field of Topological Nano-Optics.



We recently demonstrated real-space observation of topological edge states in plasmonic one-dimensional Su–Schrieffer–Heeger (SSH) chains of nanoslit resonators using photoemission electron microscopy (PEEM) (Schurr et al., arXiv:2504.02603, Science Advances (2025), <https://doi.org/10.1126/sciadv.aea3844>).

This achievement places us among the leading groups in experimental topological plasmonics, with unique access to 1 nm–precise nanofabrication and near-field mapping of plasmonic lattices at nanometer resolution.

Building on this foundation, the central idea of this project is to engineer radiative loss and coupling in plasmonic SSH chains to explore non-Hermitian and passive parity–time (PT)-symmetric physics. Control over losses will be introduced by alternating radiant (dipolar) and subradiant (quadrupolar) resonators in an SSH configuration. Crucially, this can be achieved without compromising our established precise control of hopping amplitudes. The resulting structures will exhibit lifetime-split topological modes, non-Hermitian degeneracies, and exceptional points (EPs).

The present project is a collaboration of our group with theory (Prof. Thomale) and physical chemistry (Prof. Brixner) for the use of photo-electron emission microscopy (PEEM) as analytical method. Strong communication skills and proficiency in scientific English are therefore required.

We welcome applicants with backgrounds from physics, applied physics, nanoscience or related fields with relevant experience in experimental work, ideally including published research. Candidates must hold a master’s degree in a qualifying program (equivalent to a German M.Sc. degree). Selected candidates qualify for joining the PhD program at the University of Würzburg or the Graduate School of Science and Technology and will be offered an employment contract (Research Assistant position with social security benefits under German labor law).

get in touch

How to apply

The application should include a motivation letter, curriculum vitae, transcripts and additional information on relevant experience.

Please send your application to

Prof. Bert Hecht (bert.hecht@uni-wuerzburg.de)

