

---

## Light emission enabled by the bound states in the continuum

*Peking University, China*

**Chao Peng**

**Email: pengchao@pku.edu.cn**

In recent years, photonic integration has attracted much attention owing to its revolutionary potential in next-generation computing architecture, in which on-chip light sources play an essential role. In this talk, we focus on a platform of photonic crystals, and we found that the bound states in the continuum (BICs) in such a system are essentially topological defects: the integer windings of polarization directions in momentum space. As a conserved quantity, the topological charge would last and continuously evolve with varying structural or material parameters, only if it drops out of the radiative continuum, or annihilates with an opposite charge. The evolution of topological charge leads to a series of novel phenomena, which broadens the horizon of fundamental physics, as well as boosts the applications in many areas, including the on-chip lasers for photonic integrations.



### **Short Bio:**

**Chao Peng** received his BS degree from the Department of Physics, Peking University in 2004, and his Ph.D. degree from the Department of Electronics, Peking University in 2009. From 2009 to 2011, he worked at the Department of EE, Kyoto University, supported by a JSPS Fellowship. Prof Peng joined Peking University in 2012, now he is a full professor in the State Key Laboratory of Advanced Optical Communication System & Networks, School of EECS, Peking University. His research interests include topological photonics, non-Hermitian photonics, and photonic integration. He had published over 80 peer-reviewed research articles on the Science, Nature, Phys. Rev. Lett. and other journals. He was selected as Excellent Youth Program of NSFC in 2019, and Outstanding Youth Program of NSFC in 2023