Abstract:

Quantum physics is playing an ever increasing role in several interdisciplinary research fields. In this presentation, I will show how some of the elementary mathematics of quantum mechanics can be used to synthesize classical photonic structures having novel functionalities. In the first part of my talk, I will discuss our work on parity-time reversal (PT) symmetry in optics and its potential applications in laser engineering and sensing applications. In the second part of my talk, I will introduce the concept of supersymmetry (SUSY) in quantum mechanics and show how it can be utilized to build single-supermode laser arrays.