

# Non-Hermitian Control of Nanophotonic Light Emitters

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In this presentation, we show four examples how one can manipulate nanophotonic emitters by non-Hermitian control, especially in terms of chirality. (1) Firstly, we show a simple example of non-Hermitian coupled nanocavity lasers. We have observed light emission from exact exceptional points (EPs), which show exotic characteristics of emission from EPs. (2) Recently, we observed lasing from hollow-core hexagonal nanowires which exhibit polarization vortices. Here, we show non-Hermitian perturbation to these nanowires leads to optical orbital-angular-momentum (OAM) modes. (3) Thirdly, we investigate the polarization chirality in graphene-loaded non-Hermitian photonic crystals, where non-Hermitian periodic perturbation produces interesting chirality together with topological singular points. These properties can be manipulated in the reciprocal space by breaking the symmetry. (4) Last example is the non-Hermitian skin effect, which appears in anisotropic gain-loss periodic systems. We show that one can generate chiral OAM from appropriately-designed non-Hermitian skin effect. These results demonstrate novel controllability arising from non-Hermitian degree of freedom.