SPIE/OSA Student Seminar Series

Changqing Wang

(Washington University in St. Louis)

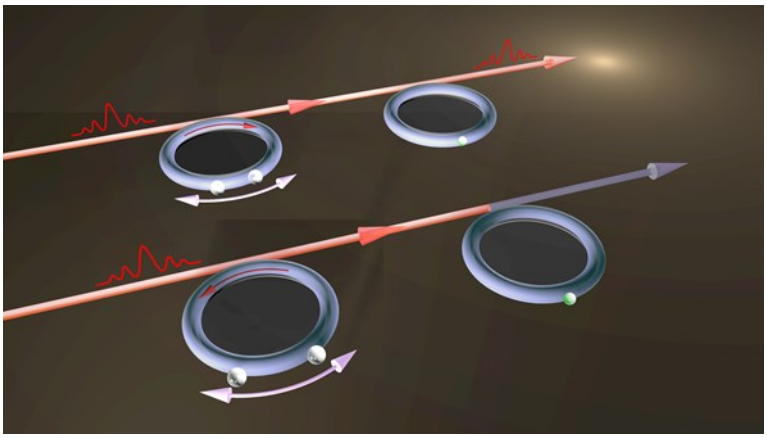
Switching the transparency of an optical medium via chiral optical modes

Tuesday, Sep. 29, 2020

11:00 am ~ 12:00 pm (CDT)

ZOOM ID: 987 0240 4364

Abstract: Transparency and opaqueness are most basic optical properties of material. An opaque medium can be turned into a transparent one with the help of strong interference, a phenomenon known as Electromagnetically induced transparency (EIT). Associated with EIT is strong slowing down of the group velocity of light in the medium, which enables applications in optical storage and quantum memory. Here we present a new way of controlling the EIT process in optical resonator systems by tuning the coupling between optical modes via scatterers. At a singular point, i.e., exceptional point (EP), the optical modes initially propagating in opposite directions merge and become chiral – they travel in one direction. By moving one scatterer, we could tailor the chirality of the mode and switch on or off the EIT process. This study offers novel routes for EIT control and opens up new avenues for applications such as slow light and optical memory.



Bio: Changqing Wang is a fifth year ESE PhD student from Dr. Lan Yang's lab in Washington University in St. Louis. His research interest is non-Hermitian physics in photonic platforms. He is a McDonnell scholar. He likes to play the piano in his spare time .

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