

Chiral photon-phonon interaction in twisted photonic crystal fiber and its applications

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Stimulated Brillouin scattering (SBS) in optical fibres, in which guided light is parametrically reflected by coherent acoustic phonons, provides a powerful and flexible mechanism for controlling light. The recent advent of twisted photonic crystal fibres (PCF) has been shown to robustly preserve optical modes carrying circular polarization states and optical vortices over long distances, allowing investigation of advanced multi-dimensional Brillouin scattering in the presence of chirality. Here, I would like to share some recent works on chiral photon-phonon Brillouin interaction in twisted PCF, includes the study of backward Brillouin scattering with plane acoustic wave and forward Brillouin scattering with chiral flexural acoustic wave. Both cases can be used in many applications, and I will show a few examples of optical vortex Brillouin laser and reconfigurable vortex isolator/convertors as well as light storage. Apart from this, I would also like to review some recent advances on multi-dimensional Brillouin scattering.



Short Bio:

Xinglin Zeng received his PhD degree in electronic science and technology from Beijing University and Posts and Telecommunication, China, in 2018. He was also a visiting PhD student in Boston University, in the group of Siddharth Ramachandran. From 2018 to 2019, he moved to the University of Hongkong as a postdoc fellow. From 2019 to 2025, he was with

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interests include multimode Brillouin scattering, photonic crystal fiber, optical vortices and their applications.