

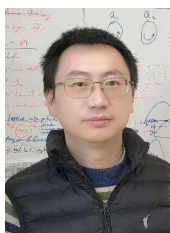
Unconventional light manipulation with synthetic frequency dimension

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Over the past few years, synthetic dimensions in photonics have been rapidly developing and generating significant interest. By utilizing different degrees of freedom of light, synthetic dimensions can be constructed. This talk will focus on the creation of the synthetic frequency dimension in dynamically modulated ring resonator systems. By designing the connectivity of the artificial lattice structure in a synthetic space that includes the frequency axis of light, we can observe unconventional optical phenomena. In particular, we will discuss recent efforts placed on simulating various physics including non-Hermitian topology, moire physics, time-dependent Hamiltonians, etc. Experimental platforms are ranged from fiber loops to micro-resonator in lithium niobate on insulator. Our works can bring interesting opportunities towards optical physics as well as light manipulation.



Short Bio:

Luqi Yuan is the professor of Physics at Shanghai Jiao Tong University. His research interests encompass a wide range of theoretical physics topics in topological photonics, non-Hermitian optics, synthetic dimensions, and hybrid quantum systems. He is also currently serving as the editorial board member in Communications Physics and the member of Early Career Editorial Board in Advanced Photonics.