Seminar/Talk

Non-hermitian topology and directional amplification

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Host: Johannes Fink

Directional amplification, in which signals are selectively amplified depending on their propagation direction, has attracted much attention as a key resource for applications, including quantum information processing. Recently, several, physically very different, directional amplifiers have been proposed and realized in the lab. In this talk, I will present a unifying framework based on topology to understand non-reciprocity and directional amplification in driven-dissipative cavity arrays. Specifically, we unveil a one-to-one correspondence between a non-zero topological invariant defined on the spectrum of the dynamic matrix and regimes of directional amplification, in which the end-to-end gain grows exponentially with the number of cavities. I will also show that the correspondence between topology and directional amplification still holds in the presence of disorder as long as the size of the point gap is larger than the disorder.

Friday, March 25, 2022 10:00am - 11:00am
Big Seminar Room B (big) 63 seats (I23.EG.102)

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