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ADRIÁN ORTEGA: Spectral and transport properties of a simple PT -symmetric tight-binding chain with gain and loss

Wednesday, 19 February 2020 18:00 (30 minutes)

We consider a simple PT-symmetric tight-binding chain with gain and loss in a symmetric configuration. Using the explicit expressions for the eigenvalues and eigenvectors of the model, we obtain the values of the parameters at which exceptional points occur, and determine the behavior of the eigenvalues and eigenfunctions around these exceptional points perturbatively. These results are used to analyze transport through the chain. We find that for the eigenstates corresponding to complex eigenvalues in the broken PT -symmetric phase, transport is deficient, and the ratio of inflow and outflow is different from one, leading to an exponential increase or decrease of the density in the chain.

Session Classification: SHORT TALKS

Track Classification: SYMPOSIUM ON SCATTERING, QUANTUM AND CLASSICAL TRANSPORT