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Ballistic Transport in One-Dimensional Random Dimer Photonic Crystals

Authors : Samira Cherid, Samir Bentata, F. Zahira Meghoufel, Sabria Terkhi, Yamina Sefir, Fatima Bendahma, Bouabdellah Bouadjemi, Ali Z. Itouni

Abstract : In this work, we examined the propagation of light in one-dimensional systems is examined by means of the random dimer model. The introduction of defect elements, randomly in the studied system, breaks down the Anderson localization and provides a set of propagating delocalized modes at the corresponding conventional dimer resonances. However, tuning suitably the defect dimer resonance on the host ones (or vice versa), the transmission magnitudes can be enhanced providing the optimized ballistic transmission regime as an average response. Hence, ballistic optical filters can be conceived at desired wavelengths.

Keywords : photonic crystals, random dimer model, ballistic resonance, localization and transmission
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