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Disorder Induced Localization in Optical Lattices

Invited Talk

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Abstract

We examine localization of ultracold bosonic atoms in a 2D disordered optical lattice in the presence of long-range interactions. The interplay of disorder, hopping, and long-range interactions lead to the emergence of localization. An enhancement of localization occurs in the domain where the average filling factor is less than unity. On the other hand, delocalization occurs in the domain where the average filling factor is larger than unity.

Keywords: Optical lattices, disorder-induced localization, ultracold bosonic atoms, long-range interactions, quantum phases

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