

**Disorder and interactions in one-dimensional quantum fluids**

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For a particle in a one-dimensional random potential all eigenstates are localized (Anderson localization). Interplay between interactions and disorder can lead to a localization-delocalization transition. In disordered bosonic systems, the ground state is either a superfluid or in a localized and disordered phase called Bose glass. Using a non-perturbative and functional implementation of the Renormalization Group, we were able to describe the Bose-glass phase and its properties in the strong disorder regime [1,2]. We also described its chaotic behavior [3], i.e. its extreme sensitivity to external parameters, characteristic of some classical and quantum disordered systems. Finally, we studied the effect of long-range interactions, which can induce a new disordered phase called Mott glass [4].

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