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**Jastrow theory of the Mott transition in bosonic Hubbard models** MANUELA CAPELLO, Laboratoire de Physique Theorique, Universite de Toulouse, FEDERICO BECCA, MICHELE FABRIZIO, SANDRO SORELLA, International school for advanced studies SISSA (Trieste) — We show that the Mott transition occurring in bosonic Hubbard models can be successfully described by a simple variational wave function that contains all important long-wavelength correlations. Within this approach, a smooth metal-insulator transition is made possible by means of a long-range Jastrow correlation term that binds in real space density fluctuations. We find that the Mott transition has similar properties in two and three dimensions but differs in one dimension. We argue that our description of the Mott transition in terms of a binding-unbinding transition is of general validity and could also be applied to realistic electronic systems.

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