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Kosterlitz-Thouless physics in a one-dimensional optical lattice[1]
ANIBAL IUCCI, University of Geneva, Switzerland, MIGUEL A. CAZALILLA, Donostia International Physics Center, Spain, THIERRY GIAMARCHI, University of Geneva, Switzerland — We study a system of quasi two-dimensional Bose gases formed in the nodes of a one-dimensional optical lattice potential. We focus on the effect of the tunneling of the atoms between adjacent planes on the Kosterlitz-Thouless crossover recently observed in the experiments of the Paris group [Z. Hadzibabic *et al.*, Nature (London) **441**, 1118 (2006)]. We compute the contrast of the interference pattern between two condensates, finding a behavior different from the one observed in the Kosterlitz-Thouless crossover. Finally, we consider the stack of a large number of pancakes.

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