Revisiting BKT physics with uniform atomic gases

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The Berezinskii-Kosterlitz-Thouless (BKT) mechanism describes how topological order can emerge in a low-dimensional system when it is cooled below its critical temperature. In particular, it is relevant for addressing the physics of 2D gases of atoms, molecules and photonic systems.

However most experimental studies that have been performed so far deal with harmonically trapped systems, for which it remains difficult to characterize some key features of BKT physics. In this talk I will describe recent experiments performed with uniform gases of Rb atoms, which make it possible to access such features, from second sound propagation to out-of-equilibrium phenomena [1, 2].

This work is supported by ERC (Synergy grant UQUAM), ANR and IFRAF.

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[2] M. Aidelsburger, J.L. Ville, R. Saint-Jalm, S. Nascimbne, J. Dalibard, J. Beugnon, *Merging N independent condensates: Disentangling the Kibble-Zurek mechanism*, arXiv:1705.02650