

Abstract Submitted  
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**The 2D Bose gas in box potential(s)**<sup>1</sup> LAURA CORMAN, LAURIANE CHOMAZ, TOM BIENAIME, Laboratoire Kastler Brossel, Paris, CHRISTOF WEITENBERG, Institut fuer Laserphysik, Universitaet Hamburg, REMI DESBUQUOIS, Institute for Quantum Electronics, ETH Zurich, SYLVAIN NASCIMBENE, JEROME BEUGNON, Laboratoire Kastler Brossel, Paris, JEAN DALIBARD, Laboratoire Kastler Brossel and College de France, Paris — In this talk, we will present our experiments with a 2D gas of bosons in box potentials with various geometries. The appearance of degeneracy in a 2D Bose gas is fundamentally different from the 3D case. We investigate the appearance of a bimodal distribution when the cloud is prepared in a flat bottom potential to test the relevance of the Berezinskii-Kosterlitz-Thouless mechanism with respect to the Bose-Einstein condensation mechanism. This measurement of degeneracy can then be confronted to the appearance of fringes when two similar systems interfere. Our technique also enables us to create various geometries for the clouds, helping to reveal vortices through interferometric measurement or short time-of-flight expansion.

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