Path Integral Monte Carlo calculations of atomic Bose gases

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Experiments on ultracold atomic gases can be quantitatively described by simple model Hamiltonians. I will show that Path-Integral Monte Carlo calculations provide a parameter-free description of ultracold atomic Bose gases that can be directly compared to experiments. Focusing on quasi-two-dimensional systems, simulations help to understand the role of many-body correlations and fluctuations, and allow us to localize the Kosterlitz-Thouless transition under the influence of the external confinement.