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Abstract for an Invited Paper
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Probing Phase Transitions in Cold Atoms¹

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In this talk I will describe various interferometric probes, which can be used to study correlation functions of low-dimensional cold atom systems. These probes allow one to analyze both properties of phases with long or quasi-long range order and phase transitions. I will suggest the way of detecting fermionic superfluidity and the symmetry of the pairing gap. I will also discuss connections between interferometry in 1D bosonic systems with partition functions of some condensed matter models and with extreme value statistics. Finally I will describe the shot noise and argue how one can suppress it both for bosons and fermions using optical lattices.

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