

Abstract Submitted
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Mapping out the quasi-condensate transition through the 1D-3D dimensional crossover KAREN KHERUNTSYAN, The University of Queensland, JULIEN ARMIJO, THIBAUT JACQMIN, ISABELLE BOUCHOULE, Institut d'Optique — By performing in-situ measurements of density fluctuations in a highly elongated weakly interacting Bose gas, we observe and quantify the transition from the ideal gas to a quasi-condensate regime throughout the dimensional crossover from a purely 1D to an almost 3D gas. We show that that the entire transition region and the dimensional crossover are described surprisingly well by the modified Yang-Yang model. Furthermore, we find that at low temperatures the linear density at the quasi-condensate transition scales according to an *interaction-driven* scenario of a longitudinally uniform 1D Bose gas, whereas at high temperatures it scales according to the *degeneracy-driven* critical scenario of transverse condensation of a 3D ideal gas.

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