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Precision measurements of momentum distribution of Tonks-Girardeau gas. JOSHUA M. WILSON, LIN XIA, WEI XU, NEEL MALVANIA, LAURA A. ZUNDEL, MARCOS RIGOL, DAVID S. WEISS, Department of Physics, The Pennsylvania State University, University Park, PA 16802 — We report on precision measurements of the momentum distributions of 1D Bose gases over a range of initial temperatures and coupling strengths. We compare our results with unbiased quantum Monte Carlo simulations. We use the comparison with theory to understand the nature of the adiabatic loading from a Bose-Einstein Condensate in 3D to an array of 1D tubes.

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