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Dynamical Fermionization of a 1D Bose gas YUAN LE, JOSHUA WILSON, NEEL MALVANIA, YICHENG ZHANG, WEI XU, LIN XIA, MARCOS RIGOL, DAVID WEISS, Pennsylvania State University — We observe the evolution of the momentum distributions of strongly interacting one-dimensional Bose gases as they expand while still confined in 1D. The momentum distribution evolves from the initial bosonic shape to that of a noninteracting Fermi gas in the same trap, in agreement with numerical simulations of hard-core bosons [1,2]. We also operate the experiment in the intermediate coupling regime. In additional work, we observe the predicted oscillation between bosonic and fermionic momentum distributions after a sudden quench of the trap frequency [2]. [1] M. Rigol et al., PRL 94, 240403 (2005). [2] A. Minguzzi et al., PRL 94, 240404 (2005).

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