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**Universal dynamics of a degenerate unitary Bose gas<sup>1</sup>**

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It has long been thought that one can not study a degenerate Bose gas with fully resonant (unitary) interactions because the gas is unstable to three-body recombination. We find empirically instead that after a Bose-Einstein condensate has been tuned from a weakly interacting state to a fully unitary gas at the peak of a Feshbach resonance, it survives for a time long enough to permit the characterization momentum-population dynamics. In particular, a high momentum tail forms and comes to a quasi-steady state in perhaps 100 microseconds, while the sample continues to survive and indeed remains degenerate for considerably longer. We show that the shape- and time-dependence of the momentum distribution scale in a universal way with sample density. This work was done in collaboration with Phil Makotyn, Deborah Jin, Cathy Klauss and David Goldberger.

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