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Universal Loss Dynamics of a Degenerate Homogeneous Unitary Bose Gas CHRISTOPH EIGEN, JAKE GLIDDEN, RAPHAEL LOPES, JINYI ZHANG, NIR NAVON, ZORAN HADZIBABIC, ROBERT SMITH, University of Cambridge — We study the loss dynamics of a degenerate ^{39}K Bose gas confined in an optical box trap. Starting with a quasi-pure Bose-Einstein condensate in the Thomas-Fermi regime, where the density n is uniform, we quench the scattering length a to the unitary regime, where a diverges. Observing the cloud after a variable hold time at unitarity directly reveals a loss rate which is dictated solely by the density of the cloud and scales as $n^{\frac{2}{3}}$. This is in stark contrast to measurements performed away from unitarity, where the more conventional n^2 scaling is observed. Our measurements also provide insight into the time evolution of the momentum distribution at unitarity.

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