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Exploring the thermodynamics of Bose-Einstein condensation in a homogeneous atomic gas TOBIAS SCHMIDUTZ, IGOR GOTLIBOVYCH, ALEXANDER GAUNT, ROBERT SMITH, ZORAN HADZIBABIC, University of Cambridge,UK — Atomic Bose-Einstein condensates have traditionally been produced in harmonic traps and only very recently it became possible to attain condensation in a homogeneous gas [A.L. Gaunt et al., arXiv:1212.4453]. In this talk we will present our new experimental results on the thermodynamics of condensation in a homogeneous weakly interacting Bose gas. We perform a systematic study of the tuning of the critical temperature with system parameters, the saturation of the thermal components in a partially condensed sample, and the total energy of the gas. We also study the dynamics of cooling in a uniform gas.

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