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**Dynamics and coherence in a collapsing dipolar BEC**

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Chromium atoms in a Bose-Einstein condensate (BEC) interact - in addition to s-wave scattering - via magnetic dipole-dipole interaction. Although the magnetic forces between the atoms which carry a large magnetic moment of 6 Bohr magnetons are still rather weak, they can become the dominant interaction when a Feshbach resonance is used to reduce the contact interaction to zero [1]. In this regime, the stability of a chromium Bose-Einstein condensate depends on the geometry of the trap. This is an intrinsic and unique effect of an anisotropic interaction. We have measured the stability diagram of such a dipolar BEC by exploring the border between stable and unstable regions [2]. When we cross this border with an initially stable condensate by a sudden change of the scattering length into the unstable regime, we observe the collapse and subsequent explosion due to dipole-dipole interaction [3]. The anisotropy of the underlying interaction reveals in the formation of a non-trivial structure during the collapse. I will discuss the dynamics of the collapse depending on the geometry of the trapping potential which we have studied experimentally and compare the results to three dimensional numerical simulations of the Gross-Pitaevskii equation. By interfering several condensates collapsing at the same time, we also study the coherence properties of the collapsing clouds.

[1] T. Lahaye et al. *Nature* **448**, 672 (2007)
[2] T. Koch et al. *Nature Physics* **4**, 218 (2008)
[3] T. Lahaye et al. *Phys. Rev. Lett.* **101**, 080401 (2008)