

# Dilute magnetic droplets of a bosonic erbium quantum fluid

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**Synopsis** We report on the investigation of droplet formation in quantum fluids of bosonic erbium.

Due to their large magnetic moment and exotic electronic configuration, erbium atoms are an ideal platform for exploring the competition and interplay between inter-particle interactions of different nature, in particular isotropic contact interactions and anisotropic and long-range dipole-dipole interactions. When these two interactions are made of opposite sign and almost balance each other, a novel many-body quantum phase appears: a high-density quantum droplet-like phase. Here, an ordinary Bose-Einstein condensate (BEC) transforms into a liquid-like state, where atoms are bound by high correlations and beyond-mean field effects. These surprising phases have been recently observed in experiments with dysprosium (Dy) and erbium (Er), and extensively studied in theory. We present the quantum droplet phenomena from the Innsbruck perspective and discuss our experimental results using an ultracold gas of Er atoms.

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