

Abstract Submitted
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Fano-Feshbach resonances in ultracold gas of thulium¹ ALEXEY AKIMOV, IVAN COJOCARU, Texas A&M University, VLAD TSYGANOK, EMIL DAVLETOV, ILIA LUCHNOKOV, VYACHESLAV BUSHMAKIN, ELENA KALGANOVA, VLADIMIR KHLEBNIKOV, Russian Quantum Center — Fano-Feshbach resonances play important role in controlling interaction between particles in ultracold quantum gasses and quantum simulators. These resonances allow one to change in wide range scattering length of two interacting atoms using magnetic field. While in alkaline atoms these resonances could only be observed in relatively high magnetic fields, in rare earth elements because of high orbital moment in the ground state one could expect number of low-field Fano-Feshbach at low (few Gauss) field. Indeed, such low field resonances been already observed in dysprosium and erbium. In this contribution, we report first observation of low –magnetic field Fano-Feshbach resonances in ultracold thulium. Been on the resonance atoms experience strong modification of the scattering length, which also lead to increased rate of 3-body inelastic collisions and therefore enhanced loss of atoms from the optical dipole trap. In our experiments, atoms were prepared in narrow transition magneto-optical trap and then loaded in optical dipole trap formed by two crossed laser beams at wavelength 532 nm. Then atoms were evaporative cooled and magnetic field depended losses were observed clearly demonstrating number of low field Fano-Fieshbach resonances.

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