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【403】Efficient production of a resonantly interacting Fermi-Fermi mixture of ^{161}Dy and ^{40}K

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We report on the realization of a novel, strongly interacting degenerate Fermi-Fermi mixture, which is a promising system for creating a mass-imbalanced fermionic superfluid. The mixture is brought into the deeply degenerate regime at low magnetic field: A narrow-line laser cooling stage allows for an optimization of the starting conditions for the subsequent evaporative cooling. We found a strong interspecies Feshbach resonance at a magnetic field near 217G. The transfer to high magnetic field requires careful steps, so to minimize losses and heating due to the presence of many narrow Feshbach resonances. On resonance, we reach a temperature of about 50nK: By tuning the population imbalance, superfluidity is in reach.

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