Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Hydrodynamic expansion of a strongly interacting Fermi-Fermi mixture of ^{161}Dy and ^{40}K MARIAN KREYER, CORNELIS RAVENSBERGEN, ELISA SOAVE, VINCENT CORRE, JEONG HO HAN, EMIL KIRILOV, RUDOLF GRIMM, University of Innsbruck and IQOQI, Austrian Academy of Sciences, Innsbruck — We study the hydrodynamic expansion of a near-degenerate Fermi-Fermi mixture in the strongly interacting regime of an interspecies Feshbach resonance [1]. While the ^{161}Dy majority component is only weakly affected in the width of its Gaussian distribution, the ^{40}K minority component features a strong effect of the mass imbalance, manifesting itself in pronounced side wings in the expansion profiles. We reproduce this unexpected behavior in a classical Monte Carlo simulation, taking into account the resonant cross section between the two species. The simulation shows the same dependence on interaction strength as the experimental data and can be extended to study other phenomena such as collective modes in the collisionally hydrodynamic regime.

[1] C. Ravensbergen et al., arXiv:1909.03424.

Supported by the Austrian Science Fund (FWF) within projects P32153-N36 and W1259-N27.

Marian Kreyer
University of Innsbruck

Date submitted: 31 Jan 2020 Electronic form version 1.4