

Abstract Submitted
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Density and particle-hole fluctuation effects on the position of Feshbach resonances in atomic Fermi gases¹ QIJIN CHEN, Zhejiang University — Feshbach resonances have been the key to achieve tunable effective pairing interaction strength in atomic Fermi gases. Most important experiments, as well as their theoretical explanations, rely on precise determination of the locations of these resonances. For the extensively studied ⁶Li and ⁴⁰K Fermi gases, the positions of the widely used *s*-wave Feshbach resonances have been regarded as being measured with high precision. In this talk, we show that due to inevitable particle-hole fluctuations, there is a significant density effect on the resonance locations. For a ⁶Li gas with a realistic $T_F = 1 \mu\text{K}$, the shift in location in terms of magnetic field can be as high as 8G at low temperature T , and this effect does not necessarily go away at high T . This will cause important consequences as to whether and how the scattering length taken from the literature need to be re-calibrated for the concrete parameters specific to a given experiment. References: Q.J. Chen, arXiv:1109.2307.

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