

Abstract Submitted
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Towards studies of the BEC-BCS crossover in a disordered environment BENJAMIN NAGLER, BENJAMIN GNGER, JAN PHIELER, ARTUR WIDERA, TU Kaiserslautern — Ultracold atoms have proven to be an invaluable tool for the precise investigation of quantum systems that are difficult to access otherwise. One example are interacting quantum particles in disordered potentials, which exhibit compelling phenomena like Anderson or many-body localization. In order to examine such systems, we have set up a new experiment in which we will immerse a degenerate Fermi gas of lithium atoms into an optical disorder potential, so called speckle. By addressing a magnetic Feshbach resonance, the atomic interaction parameter can be tuned to arbitrary values, which allows us to access both bosonic and fermionic superfluidity. One major question we will address is how the impact of disorder evolves as interactions are switched on and tuned from repulsion to attraction. I will present experimental details as well as the current status of the project.

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