

Erbium-Lithium: towards a new quantum mixture experiment

Alexandre De Martino, Florian Kiesel, Kirill Karpov, Jonas Auch, and Christian Groß

University of Tübingen

The goal of this Erbium-Lithium mixture experiment, is to lower the current temperature limit for fermions. One key for this shall be the strong mass imbalance, as we use heavy bosonic erbium atoms as a heat reservoir for the light fermionic lithium atoms. While trapping erbium in a shallow trap at 1064 nm, we want to utilize the tuneout wavelength of erbium at 841 nm. This enables an additional, narrow trap for lithium. In addition to this cooling aspect, the combination of erbium and lithium enables polaron physics, with heavy dopants of erbium in an lithium environment.