Contribution ID: **72** Type: **Poster**

Unravelling Interaction and Temperature Contributions in Unpolarized Trapped Fermionic Atoms in the BCS Regime

Wednesday 4 September 2024 17:00 (2 hours)

In the BCS limit density profiles for unpolarized trapped fermionic clouds of atoms are largely featureless. Therefore, it is a delicate task to analyze them in order to quantify their respective interaction and temperature contributions. Temperature measurements have so far been mostly considered in an indirect way, where one sweeps isentropically from the BCS to the BEC limit. Instead we suggest here a direct thermometry, which relies on measuring the line density and comparing the obtained data with a Hartree-Bogoliubov mean-field theory combined with a local density approximation. In case of an attractive interaction between two-components of 6 Li atoms trapped in a tri-axial harmonic confinement we show that minimizing the error within such an experiment-theory collaboration turns out to be a reasonable criterion for analyzing in detail measured densities and, thus, for ultimately determining the sample temperatures. The findings are discussed in view of various possible sources of errors.

References

Short bio (50 words) or link to website

https://www-user.rhrk.uni-kl.de/~apelster

Relevant publications (optional)

Career stage

Postdoc

Authors: WIDERA, Artur (RPTU Kaiserslautern-Landau); PELSTER, Axel (RPTU Kaiserslautern-Landau); LANG, Felix (RPTU Kaiserslautern-Landau); KOCH, Jennifer (RPTU Kaiserslautern-Landau); YONG, Sejung (RPTU Kaiserslautern-Landau); BARBOSA, Sian (RPTU Kaiserslautern-Landau)

Presenter: PELSTER, Axel (RPTU Kaiserslautern-Landau)

Session Classification: Posters II

Track Classification: FINESS