

# Universal dynamics in strongly interacting Bose gases far from equilibrium

*Monday 2 September 2024 12:00 (20 minutes)*

We prepare gases of Feshbach molecules of lithium 6 far from equilibrium by introducing broad excitations using an optical speckle potential, and study the relaxation of the strongly interacting isolated many-body system going through the formation of a molecular Bose-Einstein condensates (mBEC). We report for the first time, universal spatio-temporal scaling behaviour in a strongly interacting Bose gas.

By varying the interaction strength of the system and observing the duration of scaling evolution, we show how the dimensionality of the system affects the stability of soliton-like excitations, and the non-equilibrium evolution rate. Comparison of the observed dependence on interaction with the earlier rubidium experiment suggests a possible general scaling law governing the self-similar evolution.

## References

### Short bio (50 words) or link to website

PhD at the Australian National University, group of Andrew Truscott, metastable helium experiment  
Postdoc researcher at Atominstitut, Technische Universität Wien, Vienna, Austria, Schmiedmayer group, building and managing Lithium 6 quantum gas experiment.

### Relevant publications (optional)

### Career stage

Postdoc

**Authors:** Mr LIANG, Qi (Atominstitut, Technische Universität Wien); WU, RuGway (Atominstitut, Technische Universität Wien); Dr ERNE, Sebastian (Atominstitut, Technische Universität Wien); Prof. SCHMIEDMAYER, Jörg (Atominstitut, Technische Universität Wien)

**Presenter:** WU, RuGway (Atominstitut, Technische Universität Wien)

**Track Classification:** FINESS