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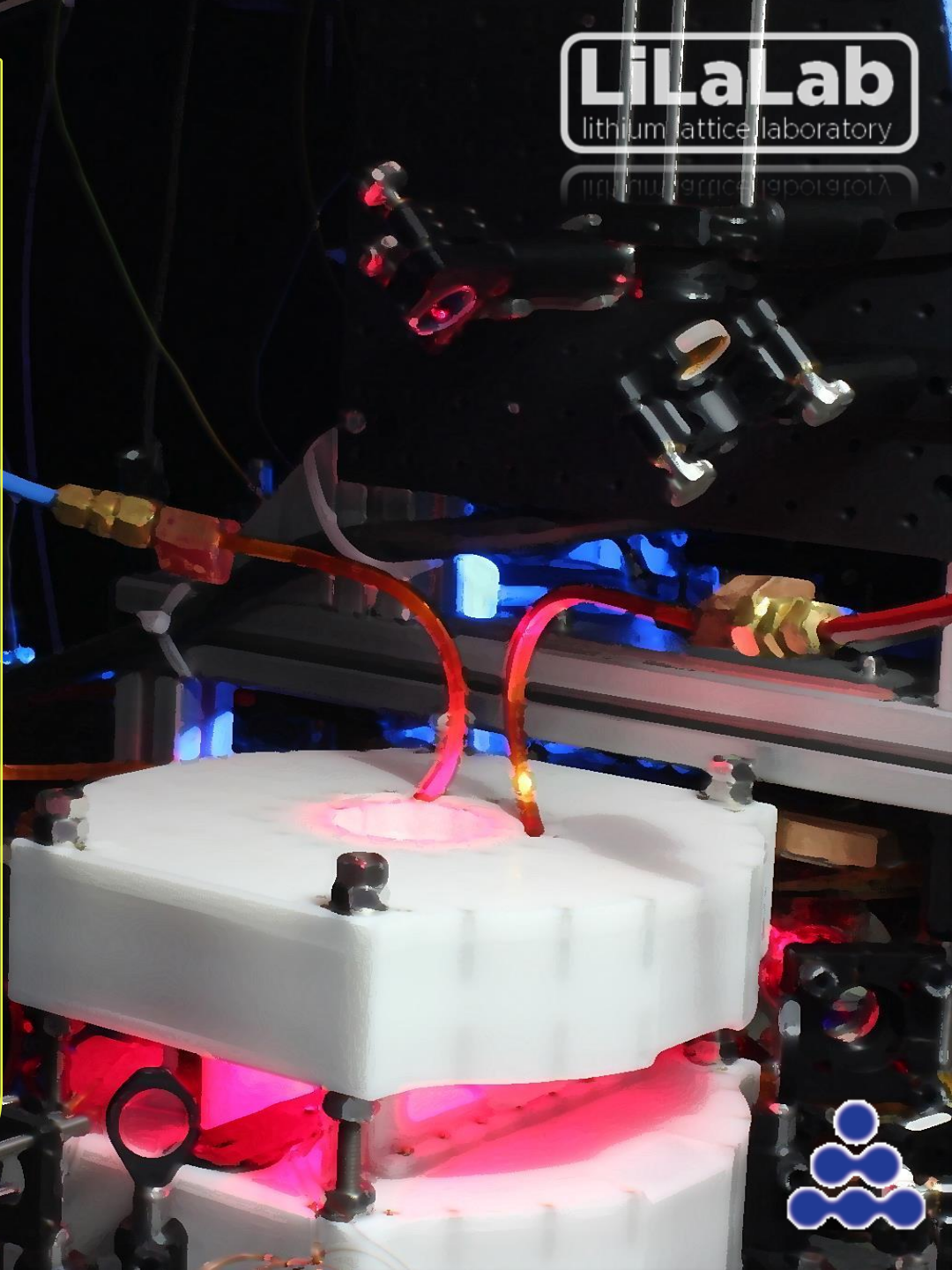
MEASUREMENT OF T^* IN THE BEC-BCS CROSSOVER REGIME

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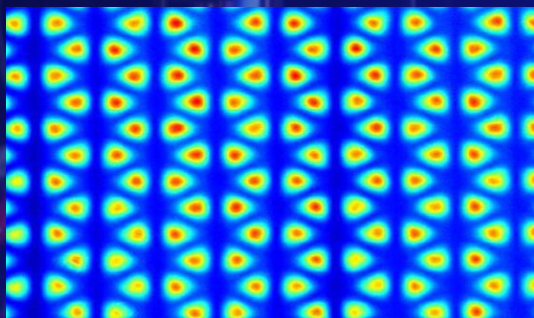
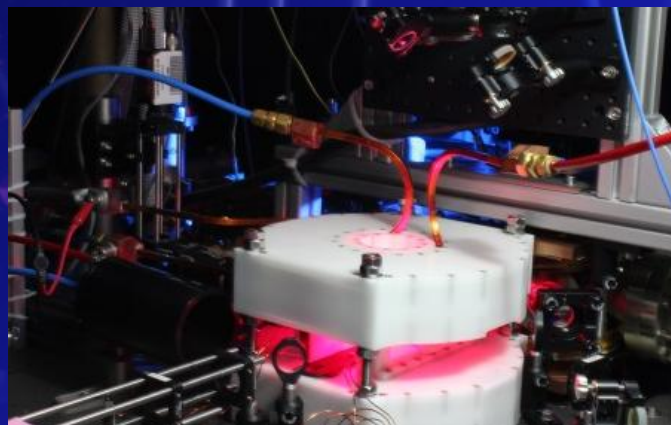
*University of Chicago
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LiLaLab
lithium lattice laboratory



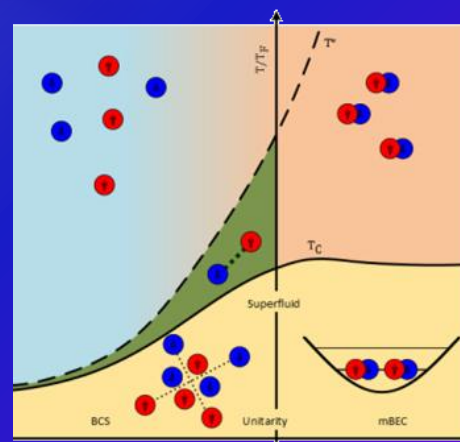
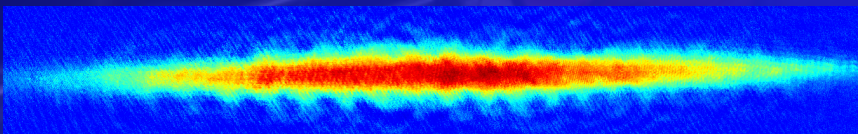
Motivation

Make use of ultracold atom experiment to investigate strongly correlated fermions in different geometries



Investigate phenomena in 2D and implement high resolution imaging technique

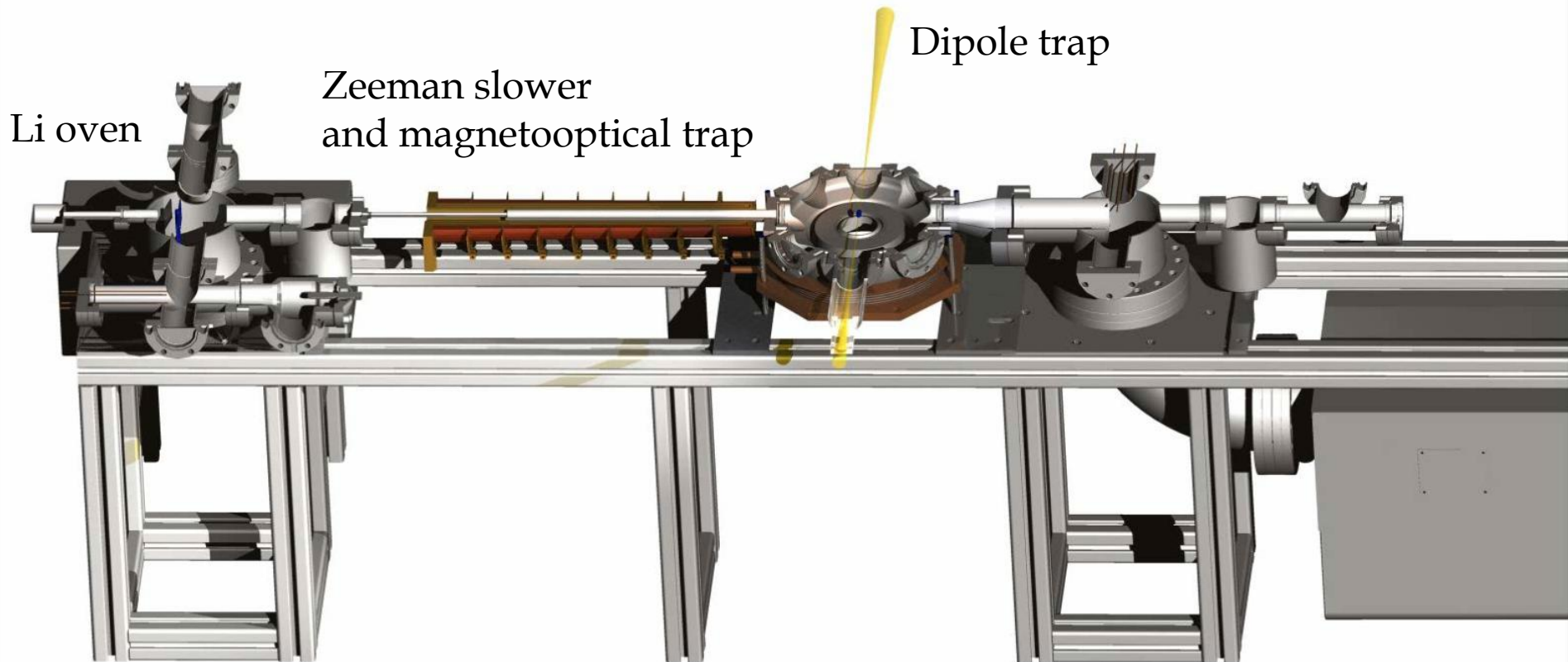
Contribute to recent work on pair formation of strongly correlated fermions



Outline

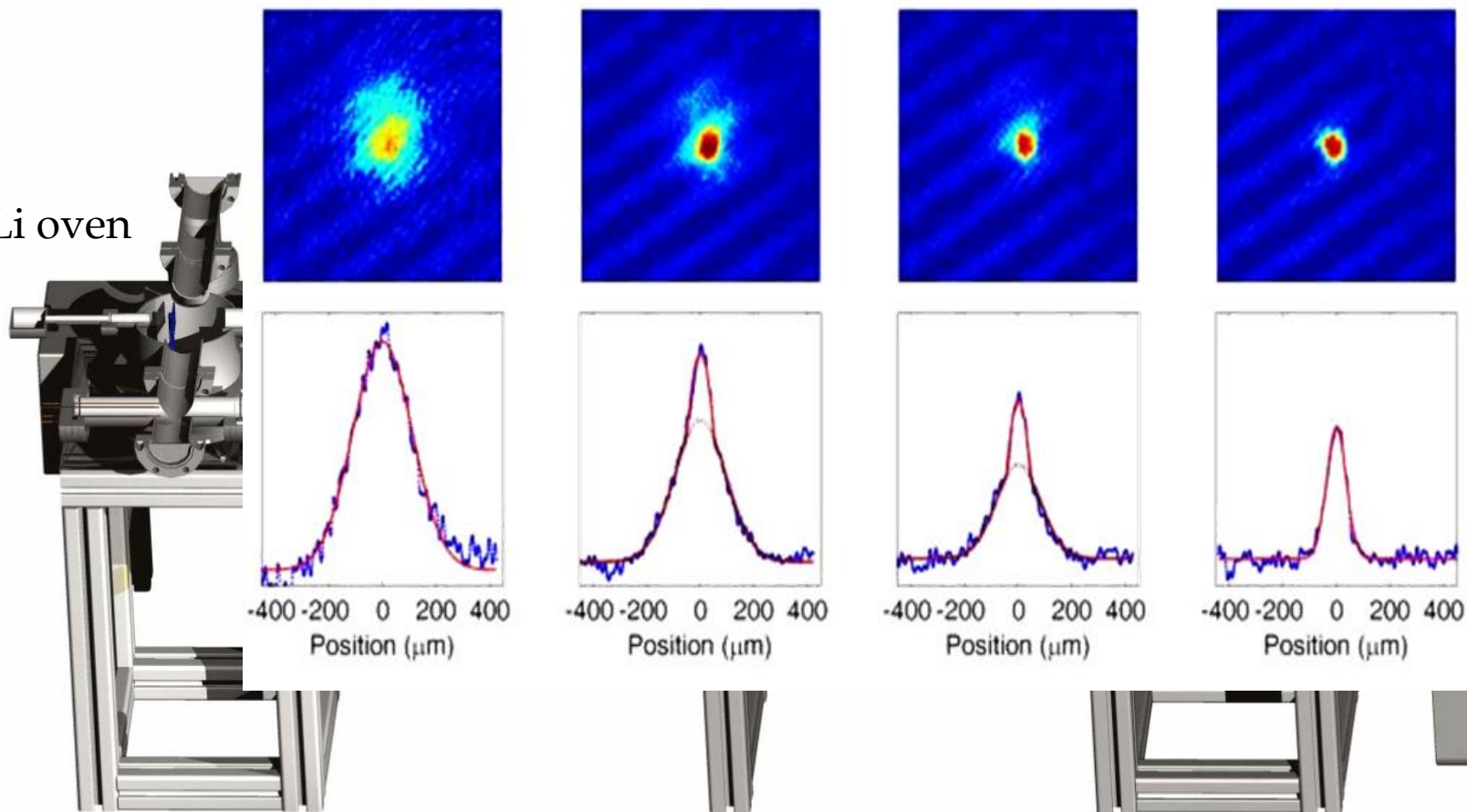
- Motivation
- Setup of the Lithium experiment
- T^* at BEC - BCS crossover
- Summary and Outlook

Experimental Overview

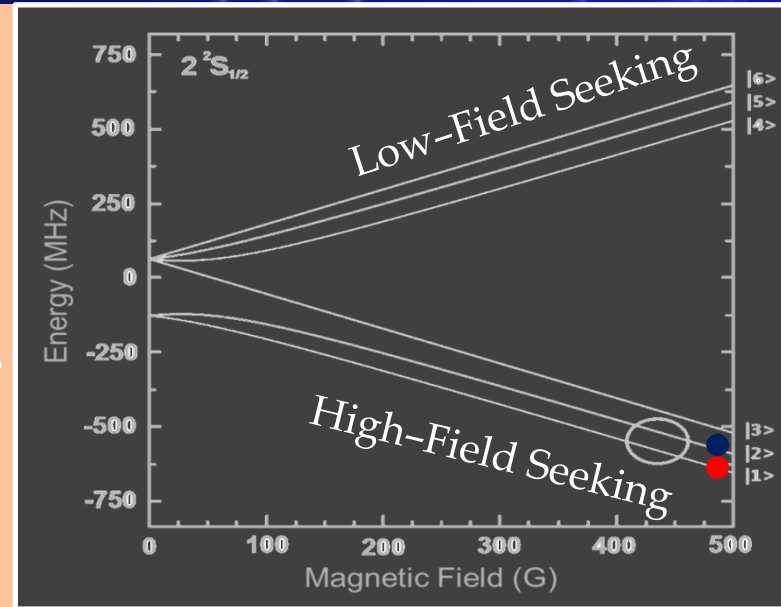
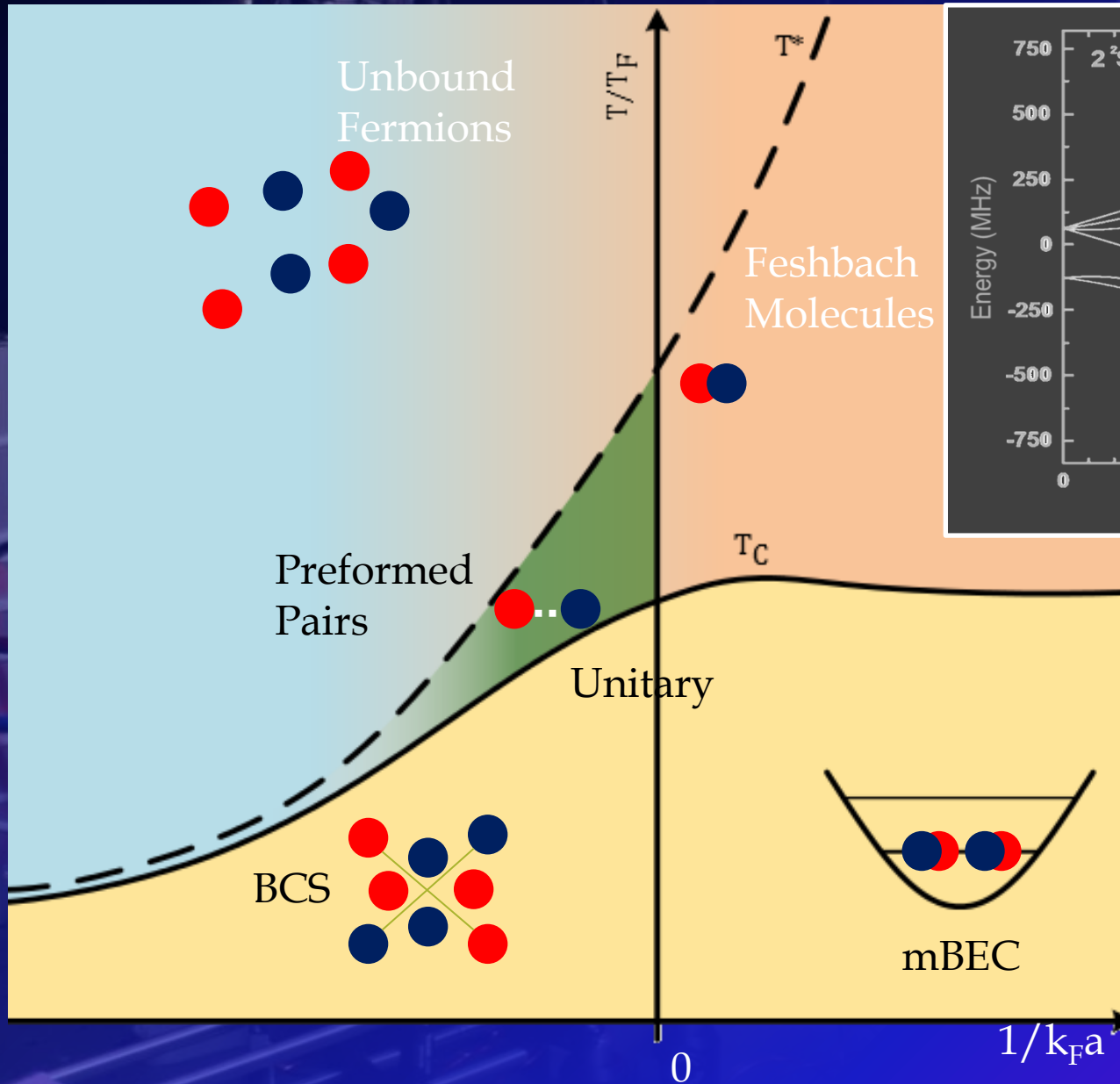


Experimental Overview

Li oven



T^* measurement

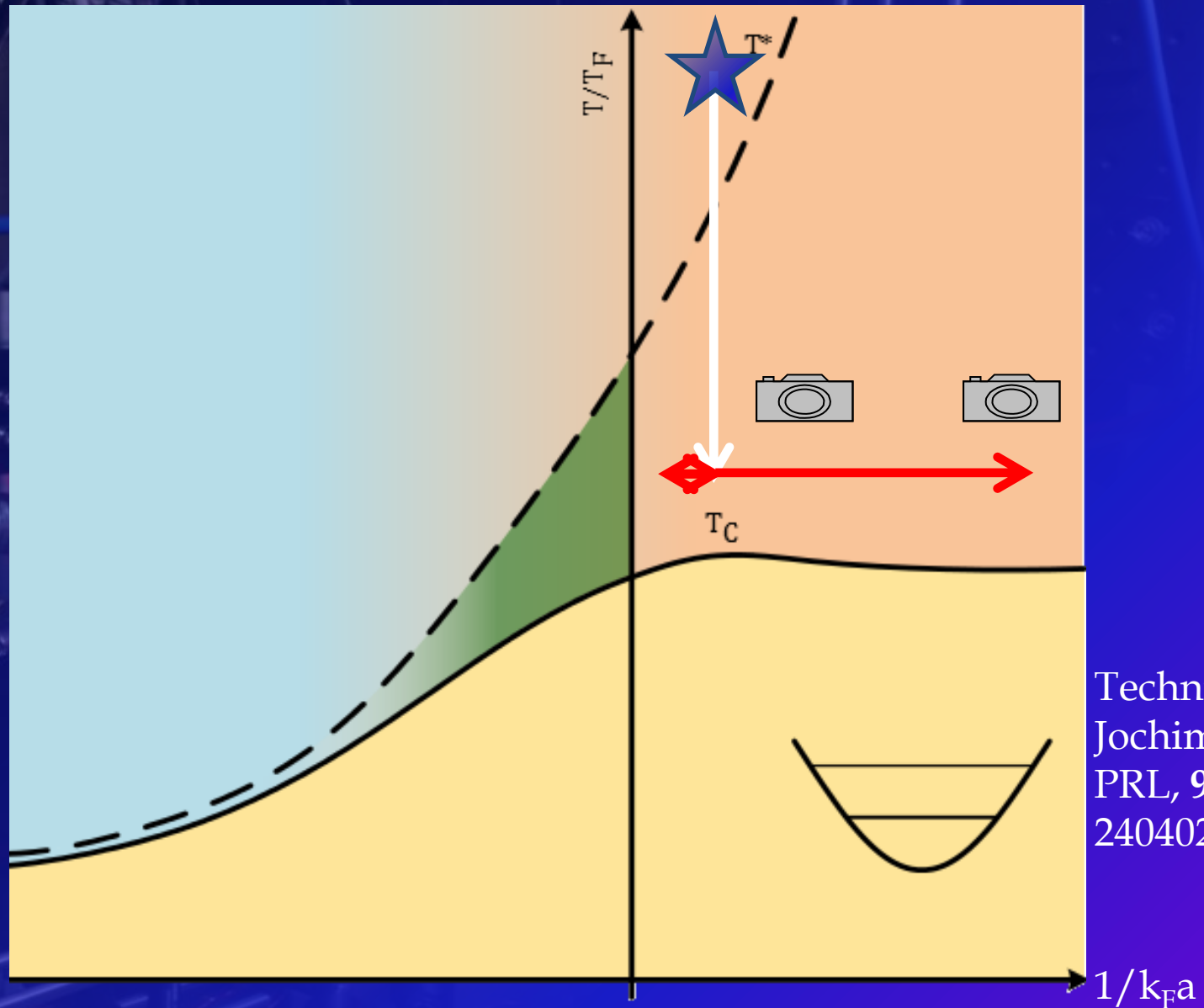


Based on:

de Melo et al. PRL 71,
3202-3205 (1993)

Randeria
Nat. Phys. 6, 561-562
(2010)

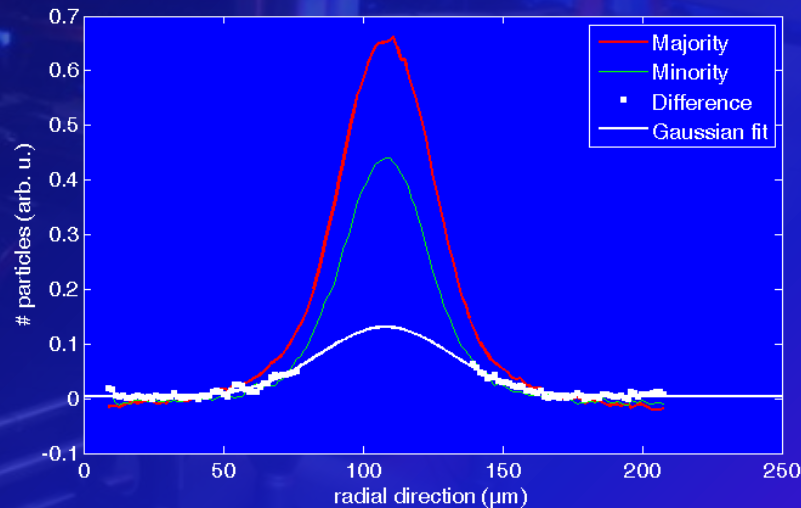
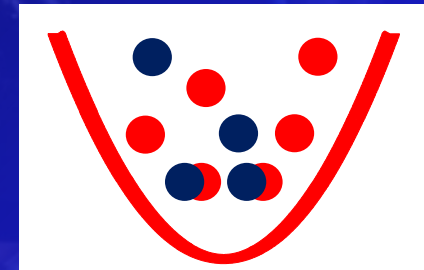
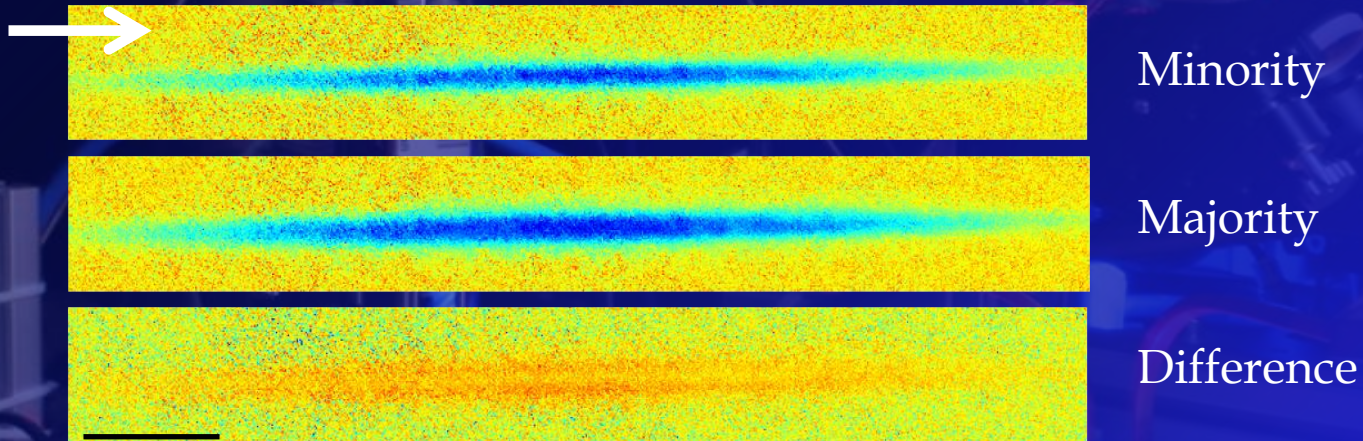
Experimental cycle



Technique:
Jochim et al.,
PRL, **91**,
240402 (2003)

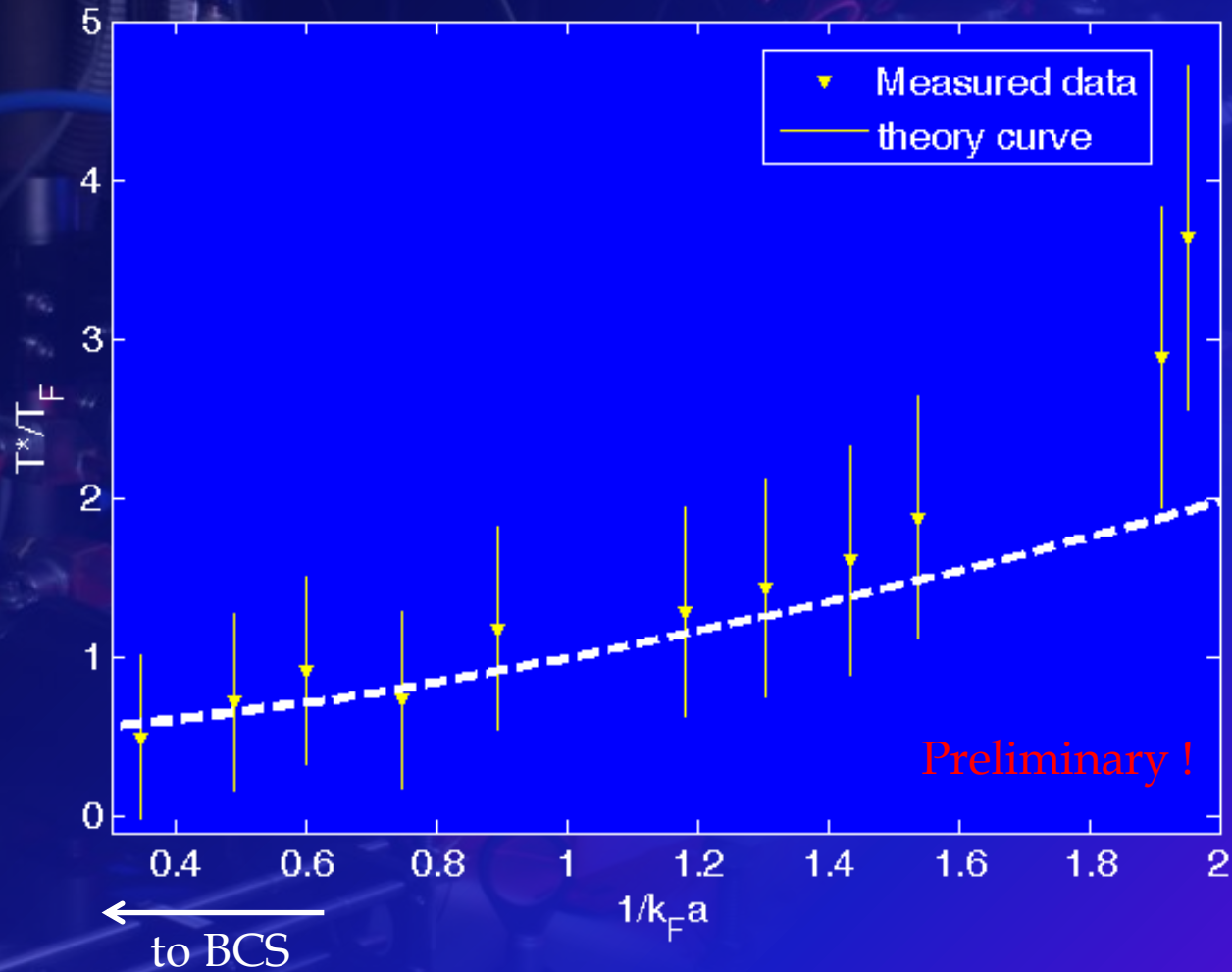
Measuring T^*

Temperature calibration spin-imbalance/balance

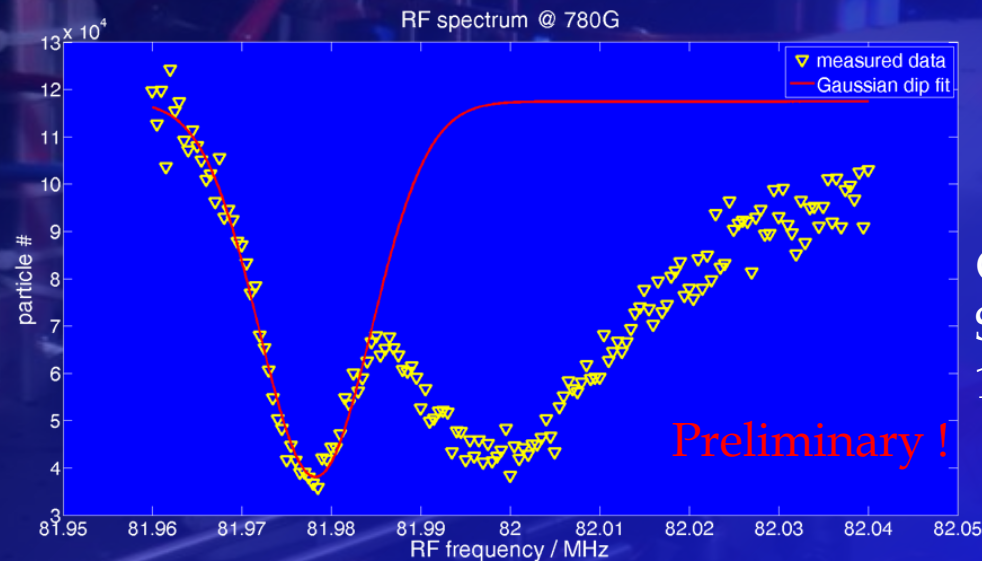
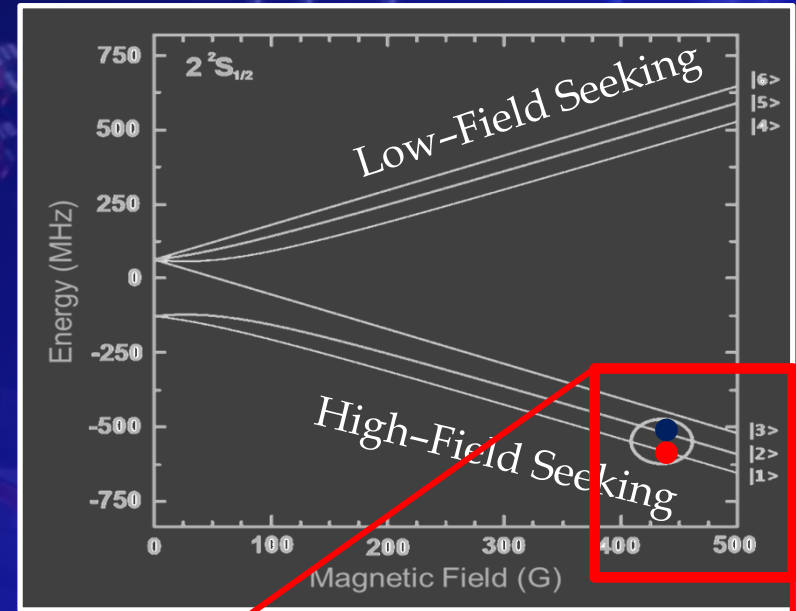
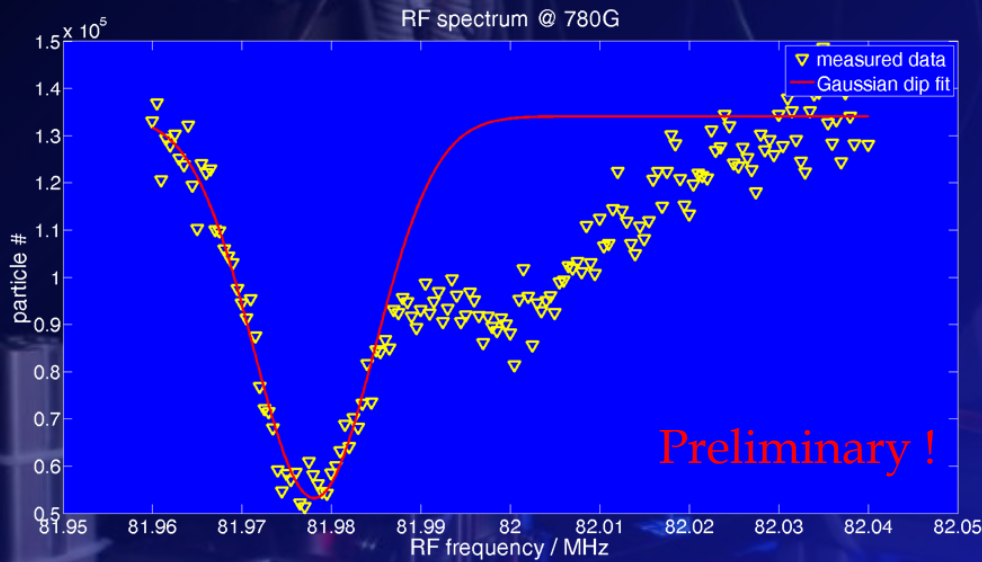


Idea based on:
Shin et al.
Nature, **451**,
689-693 (2008)

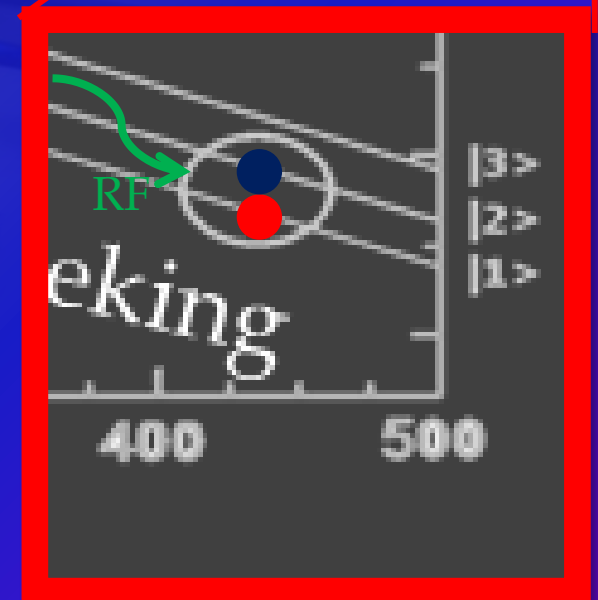
Measuring T^*



Determine T^* with RF spectroscopy

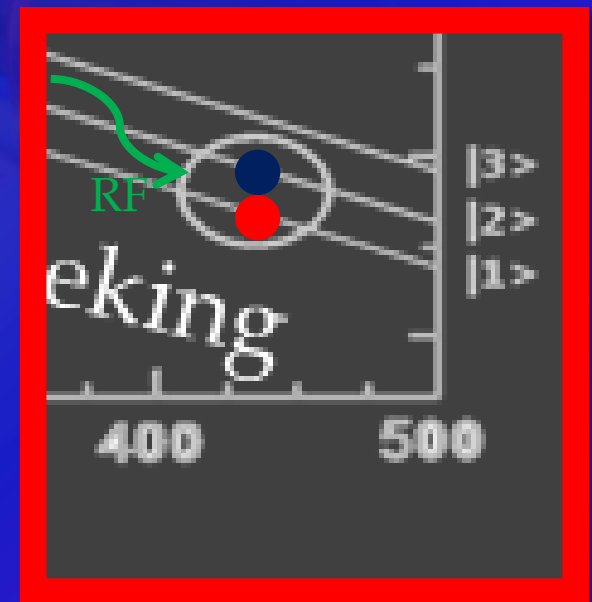
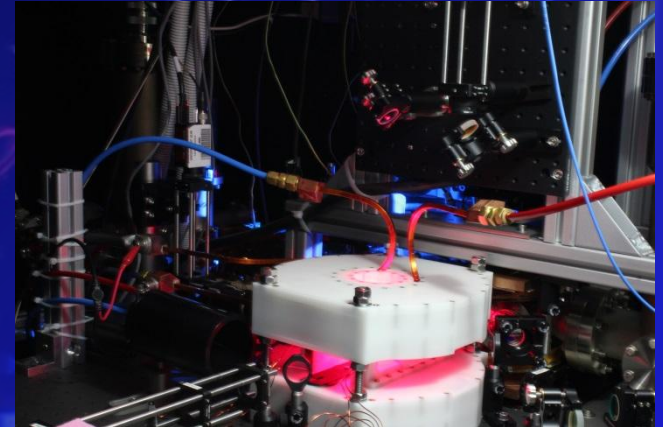


Chin et al.,
Science, 305,
1208 (2004)



Summary and outlook

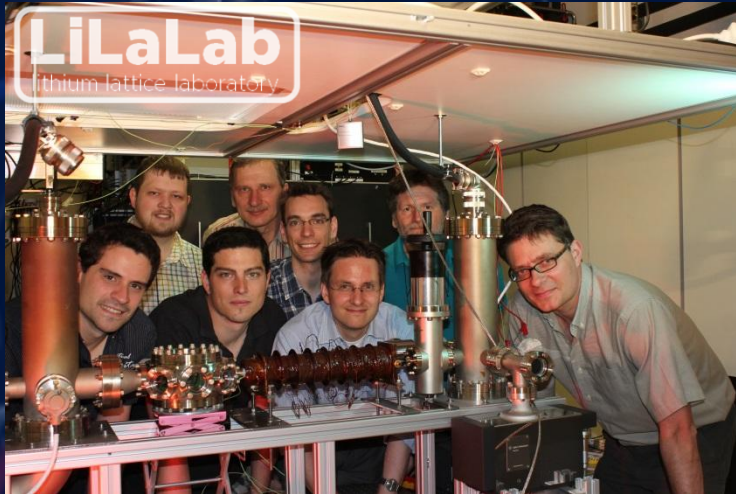
- Setup of Lithium experiment introduced
- Two approaches for T^* measurement presented
 - Magnetic field ramps
 - RF spectroscopy
- Extending setup for 2D confinement
- Loading in optical lattice
- Realizing site resolved imaging



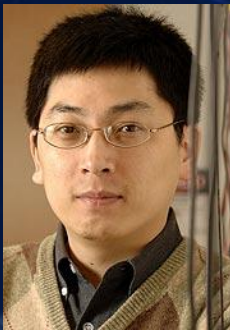


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Funding:



SFB/TRR 21