

Single weakly-bound NaCs molecule in optical tweezers

Yichao Yu

Kenneth Wang, Lewis Picard

Jessie T. Zhang, William Cairncross

Ni Group/Harvard

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Molecules

- Dipole moment
- Rich internal states
- ...

Optical tweezers

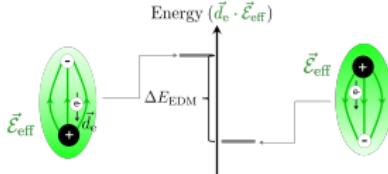
- Single site imaging
- Single site addressing
- Flexible geometry
- ...

Quantum Chemistry

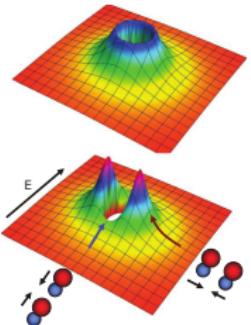
Molecules

- Dipole moment
- Rich internal states
- ...

Precision Measurement



Science 343, p. 269-272 (2014)

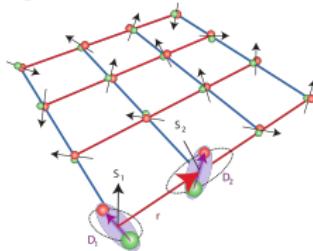


Nature 464, 1324 (2010)

Optical tweezers

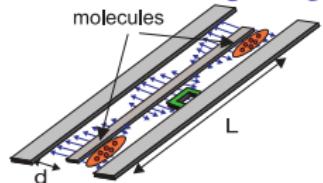
- Single site imaging
- Single site addressing
- Flexible geometry
- ...

Quantum Simulation



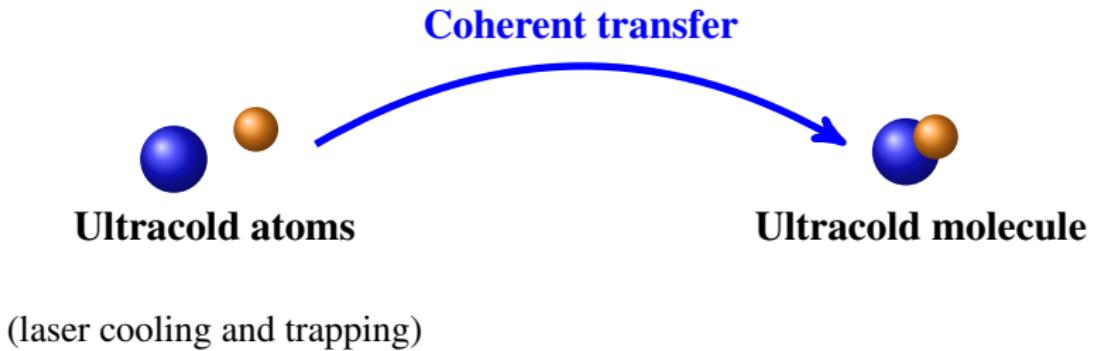
Nat. Phys. 2, 341 (2006)

Quantum Computing

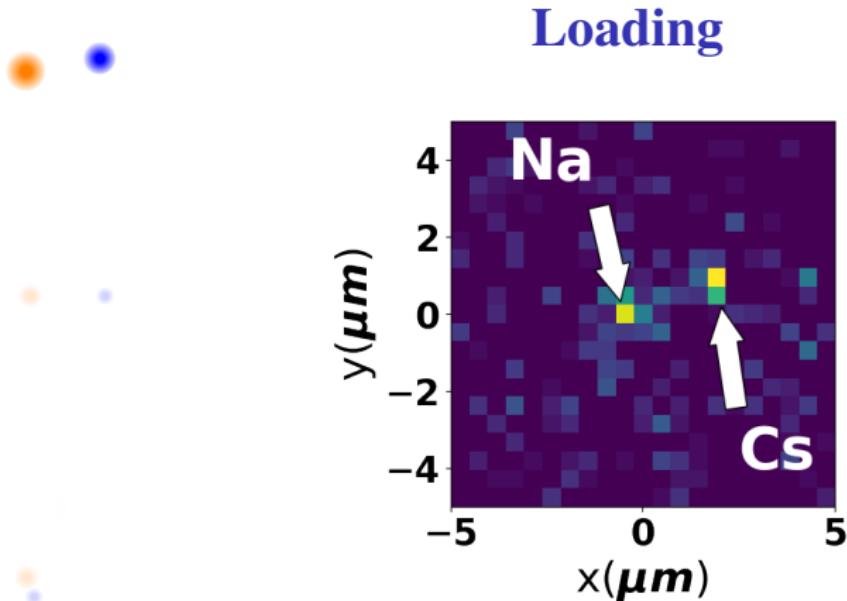


Phys. Rev. Lett. 97, 33003 (2006)

From atoms to molecules

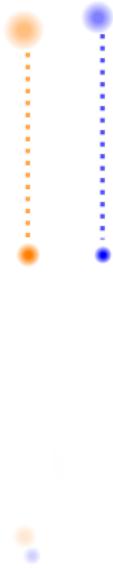


From atoms to molecules

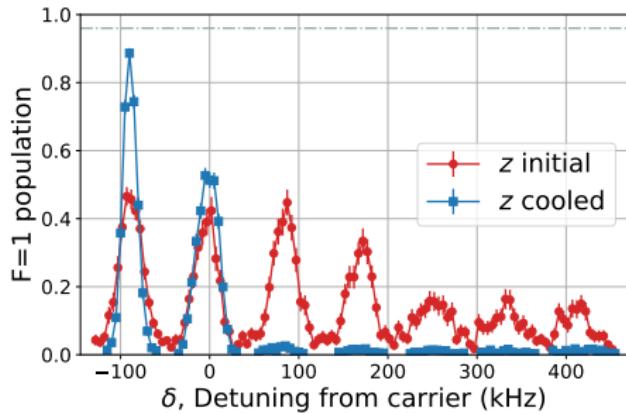


Loading probability per site: 60%
Post select on initial and final state.

From atoms to molecules



Cooling



Cs: 96% ground state¹

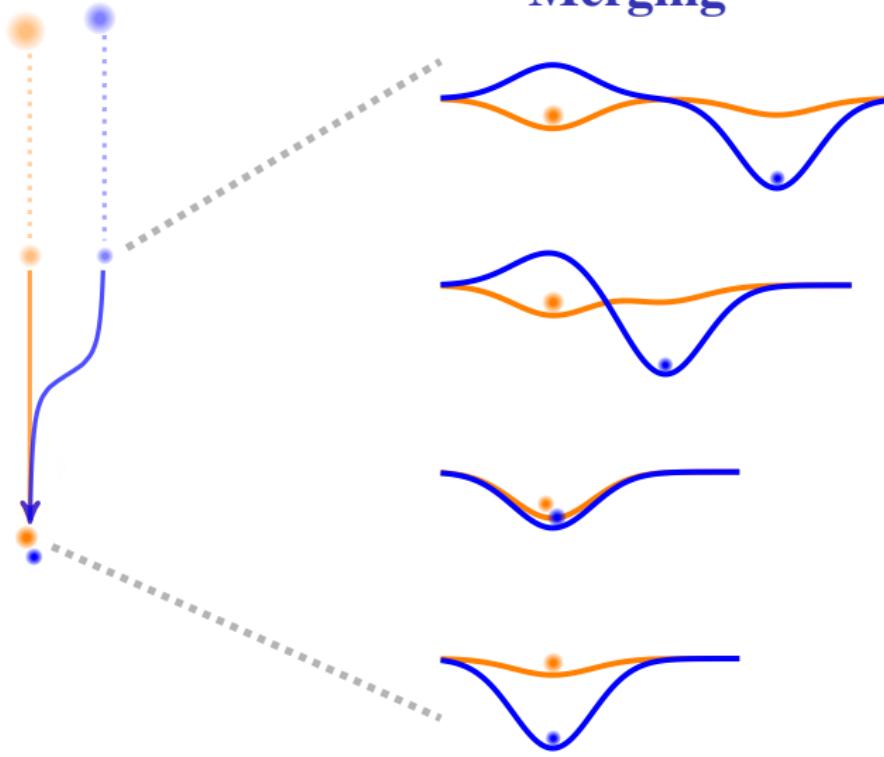
Na: 94% ground state²

¹Phys. Rev. X 9, 021039

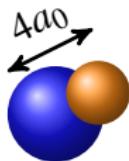
²Phys. Rev. A 97, 063423

From atoms to molecules

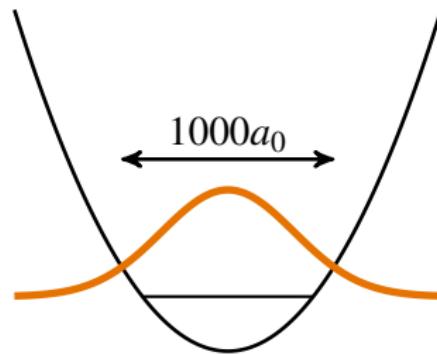
Merging



Wave function size mismatch



Molecule



Atom

Raman transfer

Experiment

Outlook

