

# ICAP2022

Contribution ID: 87

Type: **Poster presentation**

## Site-Resolved Imaging of a bosonic Mott insulator of $^7\text{Li}$ atoms

*Tuesday, 19 July 2022 17:00 (1h 30m)*

In this poster, we report a quantum gas microscope of Lithium-7 atoms in a two-dimensional (2D) square lattice. Individual atoms in each lattice site are imaged by Raman sideband cooling in a hybrid potential of the 2D lattice and a single tightly focused optical sheet potential. With a high numerical aperture (NA=0.65) objective, we achieve a point spread function of 630nm (full width half maximum), which is small enough to resolve the lattice spacing (752nm). About 4000 photons were collected during 1s of exposure time with a detection fidelity of 98%. Using the magnetic Feshbach resonance, we produce a large-sized unity filling Mott insulator with 1500 atoms at low temperature. We engineer our potential on a single-site level with an optical potential generated by a digital micromirror device (DMD), which opens opportunities to further cool the temperature and explore many-body localized (MBL) phases.

### Presenter name

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### How will you attend ICAP-27?

I am planning on in-person attendance

### online poster URL

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**Session Classification:** Poster session

**Track Classification:** Contributed posters: Degenerate gases, many-body physics, and quantum simulation