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Temperature scale and Adiabatic Processes of Bosons in Optical Lattices QI ZHOU, TIN-LUN HO, Ohio-State University — We show that as the optical lattice is ramped up adiabatically in a Bose gas, the temperature first decreases in the superfluid regime due to kinetic effects, but eventually increases in the Mott regime due to interaction effects. We also show that in the Mott regime, the density profile of superfluid between Mott steps can be used as a temperature scale.

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