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Manipulation, control and characterization of a bichromatic lattice TSZ-HIM LEUNG, CLAIRE THOMAS, THOMAS BARTER, MASAYUKI OKANO, DAN STAMPER-KURN, University of California, Berkeley — Ultracold atoms in optical lattices provide a clean and highly controllable platform to study many-body physics. Different optical lattices have been realized to study models in condensed matter physics. Kagame lattice has the feature of geometric frustration in both the orbital and spin degree of freedom, giving rise to possible exotic phases of matter and dynamics in flat band that have not been well studied. For the purpose of creating and stabilizing the optical Kagame lattice. We have developed experimental schemes to manipulate and characterize a bichromatic lattice. The relevant schemes, as well as recent works done with such a lattice, will be presented.

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