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Lattice assisted coupling in a spin-orbit coupled Bose-Einstein condensates: a pathway to generating stripe-phase like features.[1] VANDNA GOKHROO, THOMAS BERSANO, SEAN MOSSMAN, PETER ENGELS, Washington State University — We investigate the dynamics of a spin-orbit coupled Bose-Einstein condensate in the presence of a matching lattice. The lattice wavevector is chosen such that it can couple the two minima of the spin-orbit dispersion. We observe coherent Rabi oscillations between the relevant momentum states by quenching system parameters. The ground state phase diagram as a function of tunneling strength and spin-orbit detuning is also verified experimentally and compared to theoretical predictions. The experimentally realized ground state exhibits stripe-phase like properties. I will describe the experimental scheme and current results of the project.

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