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The non-equilibrium behavior of spinor quantum gases LAUREN AYCOCK, SRIVATSAN CHAKRAM, MUKUND VENGALATTORE, Cornell University — We report on our progress towards understanding the equilibrium phases and non-equilibrium dynamics of spinor quantum gases. These fluids feature a rich phase diagram due to the interplay between superfluidity and magnetism, and the presence of long range dipolar interactions. We present a characterization of our multi-species spinor gas apparatus capable of generating large, spatially extended spinor condensates at high duty cycle. In addition, we complement our experimental efforts with theoretical studies of the thermalization and coarsening dynamics of quenched spinor gases. We propose methods for the controlled generation, detection and study of topological defects peculiar to these multi-component quantum fluids.

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