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Role of topological defects in the dynamics of quenched spinor gases SRIVATSAN CHAKRAM, LAUREN AYCOCK, MUKUND VENGALATTORE, Cornell University — Recent experiments on ^{87}Rb spinor condensates quenched from the polar to the ferromagnetic state have observed the spontaneous formation of spin textures and topological defects identified as polar core spin vortices [1]. Spin correlations seen in experimental and theoretical studies [2] of the quench disagree with those expected for a thermalized final state. This absence of thermalization might be due to spin vortices which are seen to persist over experimental time scales. As has been shown[3], the dynamics of these "coreless" vortices are distinct from that exhibited by "charge" vortices in a scalar superfluid [4]. Elucidating the dynamics of these spin vortices is key to understanding the non-equilibrium physics of quenched spinor gases. We investigate the dynamics of topological defects such as polar core vortices, merons and domain walls that could be generated during the quantum quench. We conclude with proposed experimental schemes for the deterministic generation and study of these defects.
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Mukund Vengalattore
Cornell University

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