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Motorized Glasses and Crystals: Microscopic Models of Active Matter and the Cytoskeleton

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The interior of cells is constantly forming and reconfiguring via molecular processes that dissipate chemical energy. I will discuss simulations and analytical theories of the quasi-equilibrium phase diagram of simple models of motorized crystals and motorized network glasses. The nonequilibrium nature of molecular motors leads also to dynamical transitions to states with collective sustained flows. Analogies of these dynamical transitions seem to occur in natural and artificially reconstituted cytoskeletons.