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Domain Regime in the 2D Disordered Vortex Matter GERGELY ZIMANYI, MAHESH CHANDRAN, RICHARD SCALETTAR, Physics Department, UC Davis — The 2D disordered vortex matter is simulated by large-scale molecular dynamics methods at $T=0$. Performing sweeps with the magnetic field and the disorder, we find a disordered Vortex Glass/Molasses Regime at high fields/disorder, and a Domain Regime at low fields/disorder. We do not find evidence for a region with a dilute gas of dislocations, assumed by some theoretical approaches. In the Domain Regime the dislocations are organized into domain walls, defining large dislocation-free domains. The boundary between these regimes exhibits reentrant behavior as a function of the magnetic field. This boundary is a crossover, characterized by the roughening of the domain walls.

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