Elliptical Particle Clustering in Cellular Flows SEVERINE ATIS, THEMISTOKLIS SAPSIS, THOMAS PEACOCK, Massachusetts Inst of Tech-MIT — The transport of finite-sized objects by fluid flows is relevant to a wide variety of phenomena, such as debris transport on the ocean surface or bacteria advection in fluid environment. The shape of the advected objects can strongly alter their coupling with the surrounding flow field, and hence, greatly affecting their dispersion by the flow. We present the results of investigations of the behavior of neutrally buoyant, elliptical particles in two-dimensional cellular flows. We find that their trajectories, and overall organization, are markedly different than for spherical particles, with clear clustering for the elliptical particles associated with vortices.