1145-49-2850   **Michael Barg** and **Amanda J Mangum*** (`amangum@niagara.edu`). *Examining the Relative Density of Two Lipid Types to Determine if Solutions to a Phase Separation Problem Are Geodesic Disks.*

We analyze numerical solutions to a phase minimization problem on a discretized Cassinian oval. We minimize a Landau-type free energy of a phase function, ϕ, representing the relative density of one of two types of lipids. For segregation problems where the solution consists of two disjoint sets of lipids on a membrane, it has been shown that for certain surfaces, the minority lipids will tend to form a geodesic disk-like shape roughly centered at a point of maximum Gauss curvature on the membrane. We find that for large enough minority patches, the shape may no longer be classified as a geodesic disk. We examine the ϕ value of the nodes that violate the expected geodesic disk shape for various sizes of strongly separated solutions and present an example of a minority patch that does not conform to the expected geodesic disk-like solution. (Received September 25, 2018)