1145-49-2865 **Michael C. Barg*** (mbarg@niagara.edu) and **Amanda J. Mangum**. *Using Numerical Solutions of the Geodesic Equations to Determine Sizes and Shapes of Strongly Separated Lipid Patches in Equilibrium.*

We study a two-phase separation problem on a lipid membrane treated as a surface. By minimizing an appropriate free energy functional subject to a conservation constraint, strongly separated solutions can be obtained for some values of the parameters. Numerically, the solution patch shape and location depends on a number of factors, including the grid size, a diffusion coefficient, a conservation parameter, and the initial phase distribution. For strongly separated numerical solutions, one must make a decision in order to determine the boundary of the patch. In this talk, I will discuss how solutions of the geodesic equations can be used in a decision algorithm to select the radius of an equilibrium patch in addition to providing a way of measuring the deviation of the patch from a comparably-sized geodesic disk. Subsequent patch area computations offer an approach for determining parameter values which lead to solutions that are nearly geodesic disks in the traditional sense. (Received September 25, 2018)