1099-49-33   **Rustum Choksi**, **Ihsan Topaloglu*** (`ihsan.topaloglu@math.mcgill.ca`) and **Gantumur Tsogtgerel**. *Pattern Formation on Surfaces: A Nonlocal Isoperimetric Problem on the Two-Sphere.*

From biology to physics and materials science energy-driven pattern formation on curved surfaces has been the focus of many research groups lately. In this talk we will consider an isoperimetric problem on the two dimensional sphere perturbed by a long-range interaction term. The functional we consider here arises as the sharp interface limit of the Ohta–Kawasaki sequence of functionals which model the microphase separation of diblock copolymers at the diffuse level and can be considered as a simple model of energy-driven pattern formation. Looking at the axisymmetric patterns on the sphere we will show that depending on the strength of the parameter controlling the nonlocal term such patterns are local minimizers not only in this restricted class but also in the broader sense (i.e., with respect to *all* perturbations). We then explore the rigidity, due to curvature effects, in the criticality condition via several quantitative results regarding these axisymmetric critical points. (Received February 03, 2014)