1135-49-2347 **Vikash Chaurasia*** (vikash.chaurasia@oist.jp), Vikash Chaurasia, Mathematics, Mechanics and Materials Unit, 1991-1 Tancha, Onna-son, Onna-Village, Japan, and **Eliot Fried** and **Yi Chao Chen**. *Interacting elastic curves on a sphere.*

Confinement of flexible curves endowed with finite bending stiffness to a surface is pervasive in nature. In the case of multiple curves on the surface, the equilibrium configuration of the curves is governed by short and long range interaction between them. We have derived a generalized, coordinate free variational framework for studying the interaction between two curves that are restricted to a sphere. The factors determining the equilibrium configuration of such system are size of the sphere on which the curves are restricted, bending stiffness of the curves and the strength of their interaction potential. Using the framework, we solve an example in which two curves are uniformly charged. We find the stability of the trivial solution analytically. We also solve the discretized version of the equilibrium equation numerically to obtain the non-trivial configurations. We found 2-fold, 3-fold and higher n-fold symmetric solutions for given length of the curve. The stability of the non-trivial solutions are computed using eigenvalues of the hessian obtained by discretizing the second variation expression at the critical points. Results demonstrate that the self energy of the rods stabilize the trivial solution and has a straightening effect on the shape of non trivial solutions. (Received September 26, 2017)