1050-58-61 **Yisong Yang*** (yisong.yang@yu.edu), New York, NY 10033. *Compactness and Minimization for Two-Dimensional Skyrme Energy.* Preliminary report.

The original Skyrme model arising in particle physics governs maps from R^3 into S^3 which are topologically stratified by their topological degrees. In this talk, we present some existence results for a modified Skyrme model, referred to as the baby Skyrme model by physicists, governing maps from R^2 into S^2. The structure of the energy functinal allows an effective application of the principle of concentration-compactness when the coupling parameters obey a restrictive condition. Here we show that, a new method, which we referred to as the method of substantial inequalities resembling the energy splitting and charge conservation relations in a nuclear fission process, gives us a more effective tool in solving such a topologically constrained minimization problem. (Joint work with Fanghua Lin) (Received February 22, 2009)