

1011-58-275

Sergiy V. Koshkin* (koshkin@math.ksu.edu), Department of Mathematics, Kansas State University, Manhattan, KS 66502. *Homogeneous spaces and Faddeev-Skyrme model*. Preliminary report.

We define Faddeev-Skyrme energy for maps from closed 3-manifolds into arbitrary simply connected homogeneous spaces and generalize the notions of homotopy type and 2-homotopy type to Sobolev maps with finite energy. It is proved that energy minimizers (Skyrmions) exist for each 2-homotopy type and even for each homotopy type when the homogeneous space is symmetric. The proof is based on presenting an arbitrary map into a homogeneous space by a fixed reference map and a flat connection on a coset bundle over the source manifold and applying variational methods of gauge theory. In the process we develop gauge formalism for coset bundles of Lie groups. (Received August 29, 2005)