1050-57-72 **Hans K Shmidheiser*** (shmid@cims.nyu.edu), New York University, 251 Mercer St, New York, NY 10012. *The Lattice Faddeev Model.* Preliminary report.

We describe the Faddeev Model for knotted solitons. We briefly mention the known results, including the 3/4 energy growth law and the existence results of Lin and Yang. We discuss how the numerical investigations of Faddeev, Battye and Sutcliffe, and Ward, motivated the study of the Lattice Faddeev Model. In particular, we focus on how one computes a Hopf number for a nice map $u : \mathbb{R}^3 \to S^2$ (that decays to constant at infinity) from the data $\{x, u(x)\}_{x\in\mathbb{Z}^3}$. Alternatively, we show how one can use this to ascribe a "Hopf number" to a map $u : \mathbb{Z}^3 \to S^2$. This technique can be used in a more general setting to compute topological invariants for maps between manifolds, given in terms of differential forms, by sampling at discrete points. Finally, will mention the existence results for the Lattice Faddeev Model. (Received February 25, 2009)