1078-35-164 **Paul Smith*** (smith@math.berkeley.edu), Department of Mathematics, University of California, Berkeley, 970 Evans Hall, Berkeley, CA 94720-3840. *Global regularity of energy-critical Schrödinger maps: sub-threshold dispersed energy.*

We consider the Schrödinger map initial value problem

$$\begin{cases} \partial_t \phi &= \phi \times \Delta \phi \\ \phi(x,0) &= \phi_0(x), \end{cases}$$

with $\phi_0 : \mathbf{R}^2 \to \mathbf{S}^2 \hookrightarrow \mathbf{R}^3$ a smooth H^∞_Q map from the Euclidean space $\mathbf{R}^2$ to the sphere $\mathbf{S}^2$. Given energy-dispersed data ϕ_0 with subthreshold energy, we prove that the Schrödinger map system admits a unique global smooth solution $\phi \in C(\mathbf{R} \to H^\infty_Q)$. Global-in-time bounds on certain Sobolev norms of ϕ are also established as a consequence of the proof. Key ingredients in the proof are improved local smoothing and bilinear estimates, which we obtain by adapting the Planchon-Vega approach to such estimates to the nonlinear (or linear covariant) setting of Schrödinger maps. (Received December 05, 2011)