1019-35-87 **Peter W Bates*** (bates@math.msu.edu), **Kening Lu** (klu@math.byu.edu) and **Chongchun Zeng** (zengch@math.gatech.edu). *Invariant Manifolds of Spikes.*

Many singularly perturbed nonlinear elliptic equations have spike-like stationary solutions. These can be found through various methods, including Lyapunov-Schmidt schemes that, in a neighborhood of a proposed spike solution, decompose the operator equation into one that is restricted to a "normal subspace" and one in a "tangential subspace". Here, these subspaces correspond to eigenstates of the operator, linearized at a spike layer state that is only an approximate solution, and where "tangential" means "corresponding to eigenvalues near zero", and "normal" means "complementary". In this talk I will describe a more global decomposition in which the "tangential subspace" is replaced by a finite-dimensional manifold of spike-like states and this manifold is invariant with respect to the corresponding nonlinear parabolic equation and is also normally hyperbolic. The stationary spike-like states lie on this manifold. (Received August 07, 2006)