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Jeremy Marzuola and **Sarah Raynor*** (raynorsg@wfu.edu), Department of Mathematics, Wake Forest University, P.O. Box 7388, Winston Salem, NC 27109, and **Gideon Simpson** and **Catherine Sulem**. *A system of ODEs for a Perturbation of a Minimal Mass Soliton.*

In this work we study soliton solutions to the nonlinear Schrödinger equation with a saturated nonlinearity. It is known that these nonlinearities have minimal-mass soliton solutions. We consider a small perturbation of the minimal mass soliton, and provide analysis to find a system of ODEs which model the behavior of the perturbation for short times. We then provide numerical evidence that under this system of ODEs a generic initial perturbation tends to the stable side of the soliton curve. This provides some initial evidence that even though the minimal mass soliton itself is known to be unstable,[?] small initial perturbations of the minimal mass soliton do tend to approach a stable soliton over time. (Received January 15, 2009)