Constance M Schober* (cschober@ucf.edu), University of Central Florida, Dept. of Mathematics, Orlando, FL 32816, and Anna Calini, College of Charleston, Dept. of Mathematics, Charleston, SC 29424. Observable and reproducible rogue waves.

In physical regimes described by the cubic, focusing, nonlinear Schrödinger (NLS) equation, the N-dimensional homoclinic orbits of a constant amplitude wave with N unstable modes appear to be good candidates for experimentally observable and reproducible rogue waves. These homoclinic solutions include the Akhmediev breathers ($N = 1$), which are among the most widely adopted spatially periodic models of rogue waves, and their multi-mode generalizations ($N > 1$), and will be referred to as multi-mode breathers. Numerical simulations and a linear stability analysis indicate that the breathers with a maximal number of modes (maximal breathers) are robust with respect to rather general perturbations of the initial data in a neighborhood of the unstable background. (Received January 27, 2014)