

# Center-stable manifold of solitons for the critical wave equation

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This talk is based on joint work with Joachim Krieger and Wilhelm Schlag. We construct a center-stable manifold for positive solitons of the semilinear wave equation with the focusing energy-critical power nonlinearity. The manifold is constructed as the dynamical threshold in the energy space between scattering solutions and blow-up solutions away from the solitons. It contains all solutions staying close to the solitons in a weak sense up to the maximal existence time. In particular, it includes some blow-up solutions with energy-concentration in finite time, but we can also find such a blow-up solution arbitrarily far from all the global solutions.