



Fundamental Characteristics of Breather Hydrodynamics

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The formation of oceanic rogue waves can be explained by the modulation instability of deep-water Stokes waves. In particular, being doubly-localized and amplifying the background wave amplitude by a factor of three or higher, the class of Peregrine-type breather solutions of the nonlinear Schrödinger equation (NLS) are considered to be appropriate models to describe extreme ocean wave dynamics. Here, we present an experimental validation of fundamental properties of the NLS within the context of Peregrine breather dynamics and we discuss the long-term behavior of such in time and space localized structures.