PTEROBREATHERS IN THEIR MOVING FRAME

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ABSTRACT

Discrete moving breathers are moving localized vibrations in a nonlinear lattice that are transient solution of the Hamiltonian, although often with long flight paths. Pterobreathers are similar entities but coupled to a nonlinear plane wave, called wing. Pterobreathers can be constructed as exact solutions with a given symmetry and often they have small wings. We propose a descriptions of pterobreathers in their moving frame based in the concept of fundamental time and frequency. The complexity of the breather spectrum is thus reduced to just two frequencies, the internal breather frequency and the wing frequency. Exact solutions allow for the use of continuation methods in terms of the frequency and thus allow for the obtention or pterobreathers with no wings, or exact moving breathers, for a specific frequency in each symmetry. We apply the theory to a realistic model for a layered silicate.

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