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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Classification of homoclinic rogue wave solutions of the nonlinear Schrödinger equation" *by* A. R. Osborne

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This article discusses how the "special" Ahkmediev, Peregrine and Kutsnesov-Ma solutions used for modeling rogue waves can be obtained from the general homoclinic solutions of the NLS equation with spatially periodic boundary conditions. Further, it is shown how to derive the homoclinic solutions from theta functions in the N = 1 case.

The paper is written in a very straightforward manner with all the parameter values explicitly detailed and limits worked out allowing one to pass from one type of solution to another. The manuscript does an excellent job at clarifying the relationships and should be of enormous help to experimentalists. The realization that the Akhmediev breather arises from small amplitude intial modulation of the plane wave in contrast

with the Kutsnesov-Ma solution which arise from a large amplitude initial modulation is important.

The manuscript is very timely as it will hopefully invite the "infinite line" community to re-examine what the periodic theory has to offer.

I have several questions:

1. On page 900 line 5, please clarify how the relationship between the wavenumber and lambda and phi is obtained rather than citing another text.

2. On page 911, lines 9 - 11, it is not completely clear how the homoclinic solutions are obtained as epsilon goes to zero. Most readers are not that familiar with theta functions and a few additional key steps to guide the reduction would help. Actually section 8 is a little too succinct and I suggest reworking it.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 897, 2014.