

New results on NLS-KP-I correspondence and multiple rogue waves events

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Abstract:

In this talk, we present a $2n - 3$ parameters family of smooth real rational solutions of the KP-I equation

$$(4v_t + 6vv_x + v_{xxx})_x = 3v_{yy}$$

obtained from a $2n - 2$ parameters family of quasirational solutions of the focusing NLS equation

$$iu_t + u_{xx} + 2|u|^2u = 0$$

and we investigate the link between these two equations. One of the new results with respect to [1] is an explanation of how to incorporate the higher Peregrine breathers of the NLS equation in the KP-I dynamics. We also give some comments on the large parametric behavior of the multi-rogue wave solutions of the KP-I equation.

References:

Ph. Dubard , V.B. Matveev, *Multi-rogue wave solutions to the focusing NLS equation and the KP-I equation*, J.of Nat. Hazards Earth Syst. Sci., 11, 667-672 (2011)

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