Oscillation theory and instability of nonlinear waves

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In recent work, Baird et al. have introduced a generalized Maslov index which allows oscillation techniques that have previously been restricted to eigenvalue problems with underlying Hamiltonian structure to be extended to the non-Hamiltonian setting [1]. We show that this approach can be implemented in the analysis of spectral instability for nonlinear waves, taking as our setting a class of equations previously investigated by Pego and Weinstein via the Evans function [2].

[1] T. J. Baird, P. Cornwell, G. Cox, C. Jones, and R. Marangell, *Generalized Maslov indices for non-Hamiltonian systems*, SIAM J. Math. Anal. **54** (2022) 1623-1668.

[2] R. L. Pego and M. I. Weinstein, *Eigenvalues, and instabilities of solitary waves*, Phil. Trans. R. Soc. Lond. A **340** (1992) 47-94.