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Gideon Simpson* (simpson@math.toronto.edu), 40 St. George Street, Room 6290, Toronto, ON M5S2E4, Canada. *Eigenvalues of matrix Hamiltonians arising from the nonlinear Schrödinger equation.*

We study the spectral properties of matrix Hamiltonians generated by linearizing the nonlinear Schrödinger equation about soliton solutions. Such spectral information on the operators is necessary to complete results on the asymptotic stability of the solitons. Using a hybrid analytical-numerical proof, we show that there are no purely imaginary eigenvalues in the spectrum of the JL linear operator for a collection 1D and 3D orbitally unstable problems, including the cubic-quintic equation. This work reveals the limits of this strategy of proof: we succeed for some supercritical 1D and 3D problems, but not all. We speculate on this failure and ways it may be extended.

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