VITALI VOUGALTER, University of Toronto, Department of Mathematics, 40 St. George Street, Toronto, ON M5S 2E4
Eigenvalues of zero energy in the linearized NLS problem

We study a pair of neutrally stable eigenvalues of zero energy in the linearized NLS equation. We prove that the pair of isolated eigenvalues of geometric multiplicity two and algebraic multiplicity $2N$ is associated with $2P$ negative eigenvalues of the energy operator, where $P = N/2$ if N is even and $P = (N-1)/2$ or $P = (N+1)/2$ if N is odd. When the potential of the linearized NLS problem is perturbed with a parameter continuation, we compute the exact number of unstable eigenvalues that bifurcate from the neutrally stable eigenvalues of zero energy.