

Global dynamics above the ground state energy for the one-dimensional NLKG equation

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In this paper we obtain a global characterization of the dynamics of even solutions to the one-dimensional nonlinear Klein-Gordon (NLKG) equation on the line with focusing nonlinearity $|u|^{p-1}u$, $p > 5$, provided their energy exceeds that of the ground state only slightly. The method is the same as in the three-dimensional case [arXiv:1005.4894](#), the major difference being in the construction of the center-stable manifold. The difficulty there lies with the weak dispersive decay of 1-dimensional NLKG. In order to address this specific issue, we establish local dispersive estimates for the perturbed linear Klein-Gordon equation, similar to those of Mizumachi [arXiv:math/0605031](#). The essential ingredient for the latter class of estimates is the absence of a threshold resonance of the linearized operator.

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