

POINTWISE DECAY FOR THE ENERGY-CRITICAL NONLINEAR WAVE EQUATION ON PERTURBATIONS OF MINKOWSKI SPACETIME

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ABSTRACT. On Minkowski spacetime, the optimal decay rate for the energy-critical nonlinear wave equation $(-\partial_t^2 + \Delta)\phi = \phi^5$ with smooth and compactly supported initial data is $\langle t \rangle^{-1} \langle t - r \rangle^{-3}$ and was shown by Grillakis. In this talk, we outline the ideas used in proving the optimal decay rate everywhere for this problem with a potential on perturbations of the Minkowski spacetime that decay at spatial infinity. This decay rate depends on how rapidly the vector fields of the metric coefficients and of the potential decay at spatial infinity and the method of proof recovers Grillakis' result on the Minkowski spacetime. The main ideas used include local energy decay and Strichartz estimates for vector fields of the solution.