

SPECTRAL STABILITY FOR SPECIAL SOLUTIONS OF SECOND ORDER IN TIME PDE - THEORY AND CASE STUDIES

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In this talk I will first describe briefly the recently developed (jointly with A. Stefanov) abstract theory to treat the linear stability of special solutions of second order in time evolutionary PDEs. The goal of this studies is to completely characterize the ranges of the wave speeds and frequencies that give rise to stable waves. As an illustration, I will discuss the solitary waves for the Benney-Luke equation as well as the traveling standing waves for the Klein-Gordon equation in both the whole line and the periodic context. The stability of the ground state solutions for the Klein-Gordon equation and the Klein-Gordon-Zakharov system will be discused as well.