

Seminar of the Work Group
Nonlinear Partial Differential Equations
SS 24

April 17th, 2024, 11:30 - 12:30
Seminar room: SR 3.069

On the Bäcklund Transform and the Stability of the Line Soliton of the KP-II
Equation on \mathbb{R}^2

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Abstract

We study the Miura map and the resulting soliton-addition-map of the KP-II equation on \mathbb{R}^2 , with the ultimate aim of proving the modulational stability of the line soliton in L^2 . We classify solutions of the Miura map that are close to a modulated kink, obtaining a large family of stable perturbations of the line soliton in L^2 , and prove codimension-1 stability under perturbations in a weighted space by studying the range of the soliton-addition-map. The method is flexible enough to allow the study of the stability of multisoliton as well.