

THE SCATTERING APPROACH FOR AN INTEGRABLE SHALLOW WATER EQUATION

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The isospectral problem for the Camassa-Holm shallow water equation is a weighted Sturm-Liouville problem. The spectral data consists of a continuous spectrum and a finite or infinite number of eigenvalues. We present an approach for determining the evolution of the scattering data, applicable independently of the number of eigenvalues. In the case of finitely many eigenvalues the initial value problem can be solved by the inverse scattering method.