Meeting on Computational and Analytic Problems in Spectral Theory

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Abstract of Talk

THE INVERSE SPECTRAL TRANSFORM FOR THE CONSERVATIVE CAMASSA–HOLM FLOW

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We solve the Cauchy problem for the Camassa–Holm equation (a nonlinear PDE which models shallow water waves) with decaying initial data by means of establishing the corresponding inverse spectral transform, that is, solving an inverse spectral problem for an indefinite Sturm–Liouville problem of the form

$$-f'' + \frac{1}{4}f = z\,\omega f + z^2 \upsilon f.$$

In particular, the conservative Camassa–Holm flow is completely linearized by suitably chosen spectral quantities.