



"Matrix algebra techniques for solving the matrix nonlinear Schrodinger equation"

Friday, April 11, 3:30 pm
Pickard Hall, Room 304

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Abstract:

Nonlinear Schrodinger (NLS) equations have important applications to signal propagation in optical fibers, wave propagation in nonlinear media, and surface waves on sufficiently deep waters. Their initial value problem can in principle be solved by the inverse scattering transform (IST). In this talk we shall discuss cases in which the IST can be implemented explicitly to get closed form solutions of the matrix NLS equation. Both the indirect method of following the "trajectory" of the IST and the direct method of simply substituting the solution obtained in the matrix NLS equation are presented. We shall discuss various generalizations of the matrix NLS equation which can be solved explicitly by similar matrix algebra methods.