



"Chaotic scattering via the separatrix map in solitary wave interactions"

Thursday, February 5, 2:30 pm
Pickard Hall, Room 487

Dr. Richard Haberman

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Abstract:

We present a new and complete analysis of the n-bounce resonance and chaotic scattering in solitary wave collisions. In these phenomena, the speed at which a wave exits a collision depends in a complicated fractal way on its input speed. We present a new asymptotic analysis of collective-coordinate ordinary differential equations (ODEs), reduced models that reproduce the dynamics of these systems. We reduce the ODEs to discrete-time iterated separatrix maps and obtain new quantitative results unraveling the fractal structure of the scattering behavior. These phenomena have been observed repeatedly in many solitary wave systems over 25 years. Joint work with Roy Goodman.

The Math Department will provide refreshments 30 min. prior to the presentation.