PETER MILLER, University of Michigan

Semiclassical Aspects of the Three-Wave Resonant Interaction

I will describe joint work with Robert Buckingham and Robert Jenkins to analyze the initial-value problem for the three-wave resonant interaction equations, an integrable system governing three quadratically coupled fields, in an appropriate semiclassical limit. As the system is non-dispersive, long time limits do not reveal any particular simplification of the dynamics, but the semiclassical limit allows for the practical calculation of the interaction process. I will describe the construction of an appropriate semiclassical soliton ensemble and show how such ensembles can be used to understand the behavior of resonant triads in a wide variety of systems.