Hamiltonian Methods in Dispersive and Wave Evolution Equations

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PROGRAM DESCRIPTION

Dispersive equations are ubiquitous in nature. They govern the motion of waves in plasmas, ferromagnets, and elastic bodies, the propagation of light in optical fibers and of water in canals. They are relevant from the ocean scale down to atom condensates. There has been much recent progress in different directions, in particular in the exploration of the phase space of solutions of semilinear equations, advances towards a soliton resolution conjecture, the study of asymptotic stability of physical systems, the theoretical and numerical study of weak turbulence and transfer of energy in systems out of equilibrium, the introduction of tools from probability and the recent incorporation of computer assisted proofs. This semester aims to bring together these new developments and to explore their possible interconnection.