

Zaher HANI (University of Michigan, USA)

Title: The mathematical theory of wave turbulence.

Abstract:

The central object in wave turbulence theory is the "wave kinetic equation" (WKE), which stands as the wave analog of Boltzmann's kinetic equation describing interacting particle system. The mathematical problem is to provide a rigorous justification and derivation of this equation starting from the Hamiltonian wave system as a first principle; This is Hilbert's Sixth Problem for waves. After remaining open for the many years, the problem attracted considerable interest in the mathematical community in the past decade or so. In this talk, we shall discuss a recent series of works --jointly with Yu Deng (University of Southern California)-- which provided the first rigorous derivation of the wave kinetic equation, and justified the propagation of chaos hypothesis for the nonlinear Schrodinger equation.