

Plenary Session: Postmodern microlocal analysis

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Microlocal analysis is, roughly, an investigation of classical/quantum (particle/wave) correspondence in the theory of partial differential equations (PDE) with manifestations in other fields of mathematics such as differential topology, representation theory and even algebraic geometry. It relates objects from symplectic geometry (geometry describing and generalising classical dynamics) to "quantum" objects, such as solutions to PDE. The term microlocal was coined by Mikio Sato in 1973: one considers generalized functions not just locally in position but also, simultaneously, locally in frequency/momentum, hence microlocally. In addition to foundational developments, the subject has always been driven by applications. The latter trend continues now with impact on dynamical systems, spectral geometry, general relativity and other branches of mathematical physics. The ease with which we can now perform numerical experiments adds new perspectives on old methods and results. I will introduce the subject from this "postmodern" point of view and illustrate it with some recent applications.

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