Bay Area Microlocal Analysis Seminar

Friday, April 20th, at Stanford, Herrin Hall Room T195

3-4pm

Semiclassical limits of plane waves

SEMYON DYATLOV
UC Berkeley

Abstract
On a complete noncompact Riemannian manifold which is either Euclidean or hyperbolic near infinity, we study microlocal convergence of distorted plane waves $E(z, \xi)$ as $z \to \infty$. Here $z$ is the spectral parameter and $\xi$ indicates the direction of the wave at infinity. The functions $E(z, \xi)$ are generalized eigenfunctions of the Laplacian, they are also known as Eisenstein functions in the hyperbolic setting. We show that if the trapped set has zero Liouville measure, then plane waves converge to a limiting measure, if we average in $\xi$ and in $z \in [R, R + 1]$. The rate of convergence is estimated in terms of the maximal expansion rate and classical escape rate of the geodesic flow, giving a negative power of $z$ when the flow is Axiom A. As an application, we obtain expansions of local traces and of the scattering phase with fractal remainders. Joint work with Colin Guillarmou.

AND

4:15-5:15pm

Price’s law for electromagnetic waves on Schwarzschild/Kerr backgrounds

DANIEL TATARU
UC Berkeley

Abstract
I will describe recent work, joint with Jason Metcalfe, Jacob Sterbenz and Mihai Tohaneanu, on pointwise decay estimates for solutions to the Maxwell system on black hole asymptotically flat relativistic backgrounds. This is related to the nonlinear black hole stability problem for Einstein’s equations.

http://math.stanford.edu/~andras/PDE/PDE.html

Organizers: Daniel Tataru, Andras Vasy & Maciej Zworski