Analysis and Applications:
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Speaker: Carlos Kenig (University of Chicago)

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Talk Title: On the global behavior of solutions to critical nonlinear dispersive and wave equations.

Abstract:

We will discuss some recent developments in the area of nonlinear dispersive and wave equations, concentrating on the long-‐‐time behavior of solutions to critical problems. The issues that arise are global well-‐‐posedness, scattering and finite time blow-‐‐up. In this direction we will discuss a method to study such problems (which we call the "concentration compactness/rigidity theorem" method) developed by C.Kenig and F.Merle. The ideas used are natural extensions of the ones used earlier, by many authors, to study critical nonlinear elliptic problems, for instance in the context of the Yamabe problem and in the study of harmonic maps. They also build up on earlier works on energy critical defocusing problems. Elements of this program have also proved fundamental in the determination of "universal profiles" at the blow-‐‐up time. This has been carried out in recent works of Duyckaerts, C.Kenig and F.Merle. The method will be illustrated with some concrete examples.