Asymptotics and generalized Borel summability

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April 19, 2013

Asymptotic analysis is concerned with determining the detailed behavior of a function in some limit. Formal solutions as asymptotic expansions can be found for many problems for which there are no exact formulas.

Generalized Borel summability roughly deals with the inverse problem: finding the function from its asymptotic behavior. Applying it to formal asymptotic solutions one thus finds exact solutions, answering questions about existence of solutions, their uniqueness and their local (and sometimes global) behavior.

I will explain when, why, and how this is possible in the context of differential equations (ordinary or partial) and dynamical systems. I will discuss how these techniques were used recently to prove two conjectures, one in the nonlinear Schroedinger equation and another in integrable systems.

The lecture will take place in Thackeray 704 at 3:30pm.
Refreshments will start at 3:00pm.