

# APPLIED MATHEMATICS COLLOQUIUM

## TREATING SMALL DENOMINATORS WITHOUT KAM

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### ABSTRACT:

Two classical small divisor problems arise in the study of spectral properties of quasiperiodic Schroedinger operators, one related to Floquet reducibility (for low couplings of the potential term), and the other related to localization (for high couplings). Both have been traditionally attacked by sophisticated KAM-type methods.

In this talk, I will present some ideas behind more recent non-KAM based methods for both localization and reducibility, that are significantly simpler and lead, where applicable, to stronger results. In particular, they usually lead to so-called non-perturbative (i.e. uniform in the Diophantine frequency) estimates on the coupling, and sometimes to the results covering the entire expected region of couplings.

I will discuss some elements of the proofs of non-perturbative quasiperiodic localization and, as time permits, some ideas in the recent joint work with A. Avila on non-perturbative reducibility, with various sharp spectral consequences in the low coupling regime.

**MONDAY, MARCH 19, 2007**

**4:30 PM**

**Building 2, Room 105**

*Refreshments at 4:00 PM in Building 4, Room 174  
(Math Majors Lounge)*

Applied Math Colloquium: <http://www-math.mit.edu/amc/spring07>

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