Course Announcement: **Nonlinear Resonance in Hyperbolic Systems**

J. Rauch

Time: Thursdays 11:00-12:30. (Salle seminari, Dip. di Mat. U. di Pisa)

First Meeting: 8 marzo, 2007. Will meet weekly with the exception of 15 marzo. Second meeting is 22 marzo. Last meeting is 26 aprile.

Outline. The goal of this course is to use the algorithms of nonlinear geometric optics (derivation and justification included) to construct interesting examples of nonlinear interactions. The material will be largely drawn from Chapters 9,10,11 of my Lectures on Nonlinear Geometric Optics which are available on my home page (Google jeffrey rauch home page).

The most striking application is the construction (following Joly-Métivier-Rauch) of a family of smooth solutions of the inviscid compressible Euler equations which at $t = 0$ have three wave packets and which for $t > 0$ has an infinity of wave packets propagation in directions dense in the unit circle. This construction has interesting geometric and number theoretic elements.

The 8 marzo I will start by solving the excercises of §7.2 of the notes.

1