Seminar in Nonlinear Systems

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The Notorious Piston Problem and Some Recent Results Obtained by Averaging

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Abstract: The "notorious piston" problem consists of two chambers filled with gas particles and separated by a massive, adiabatic partition (the piston) which can move in one dimension. Initially, the gases on either side have the same pressure but different temperatures. Over a long period of time, one expects the gases to exchange energy via collisions of individual particles with the piston, thereby equilibrating the temperatures on either side. The problem is to describe the dynamics as this occurs. I will start by giving an overview of the history of the problem in the literature. Then I will present some new results for a model of the notorious piston. These results are obtained by averaging methods and are inspired by a theorem of Anosov.

Refreshments provided

For additional information contact Marco Lenci (201-216-5453) or Patrick Miller (201-216-8072).