

INDAM MEETING:  
**HYPERBOLIC DYNAMICAL SYSTEMS  
IN THE SCIENCES**

CORINALDO (ITALY)  
MAY 31 - JUNE 4, 2010

PÉTER TÓTH (Budapest University of Technology and Economics)

**A heat conduction model with localized billiard disks and weak interaction forces**

I study a heat conduction model with localized billiard disks interacting via conservative forces. This is a natural modification of the popular Gaspard-Gilbert model. In the weak coupling limit (with time rescaled appropriately) the energies at the lattice sites form a Markov chain, actually a set of coupled diffusion processes with continuous trajectories (unlike in the Gaspard-Gilbert model).

The hydrodynamic-limit behavior of this system is understood through a mixture of rigorous, heuristic and numerical methods. The heat conductivity turns out to decrease with temperature as  $T^{-3/2}$ , which is in surprisingly good agreement with certain experimental data.