INDAM MEETING:

HYPERBOLIC DYNAMICAL SYSTEMS IN THE SCIENCES

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Tanya Yarmola (University of Maryland)

Ergodicity of some open systems with particle-disk interactions

We consider a bounded domain on the plane containing N rotating disks pinned down at their centers. The system is coupled to heat baths that absorb and emit particles through several openings on the boundary of the domain. The particles do not interact with each other, have specular collisions with the boundary of the domain, and exchange energy with the disks. For certain classes of such systems, we show that if there exists an invariant measure with support away from the states with "trapped trajectories", then it is both absolutely continuous and ergodic. The key properties of the system that lead to absolute continuity and ergodicity are randomness of the injection process and ability to control angular velocities of the disks through appropriate particle injections.