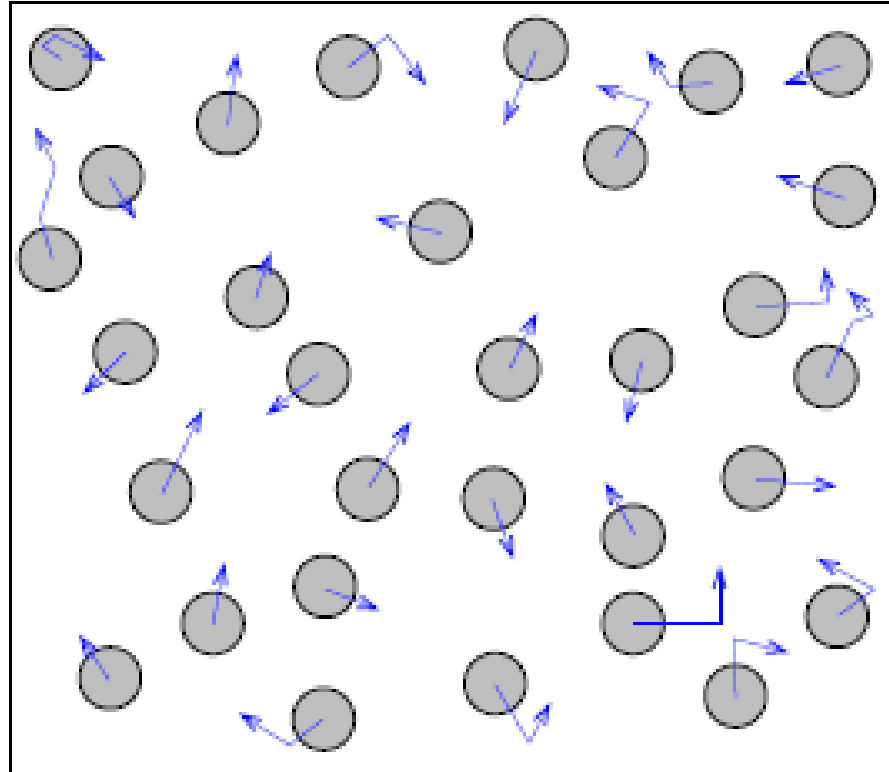


Sinai problem

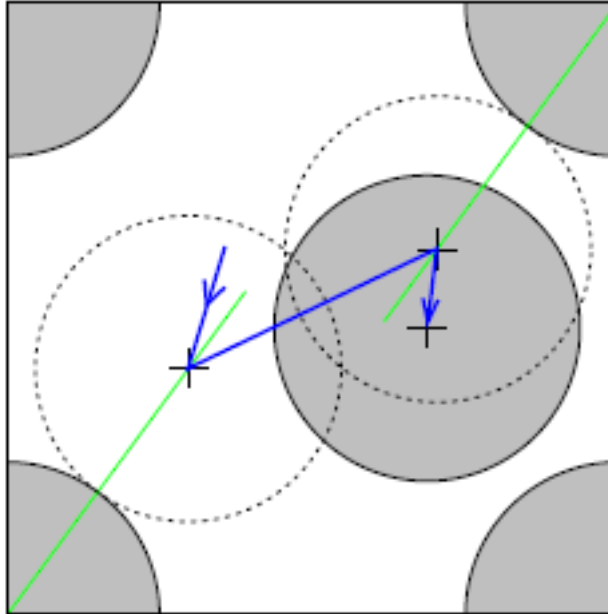
How ergodicity arises in a hard-core sphere model of a gas ?



Let us zoom in

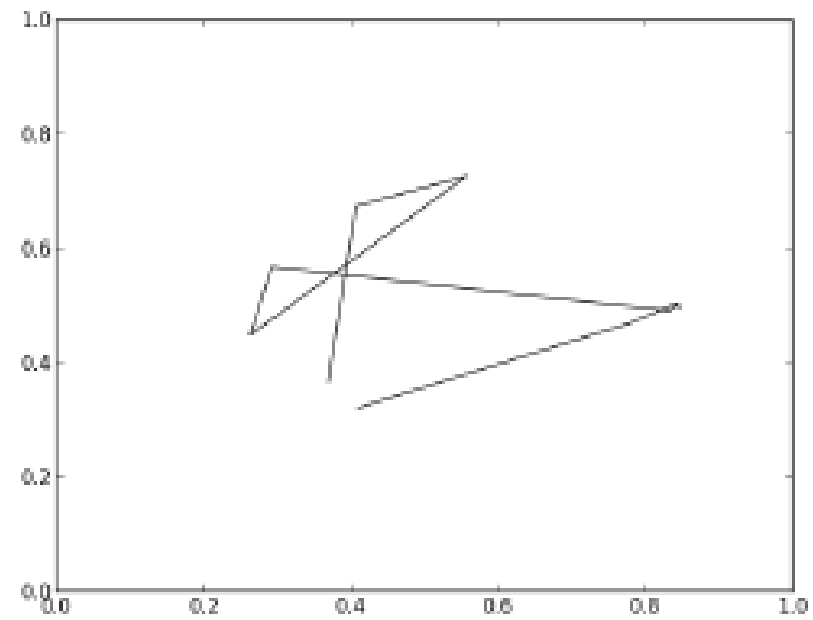
Sinai problem

Idea: let us simplify the problem considerably: a single sphere in the frozen environment of four others



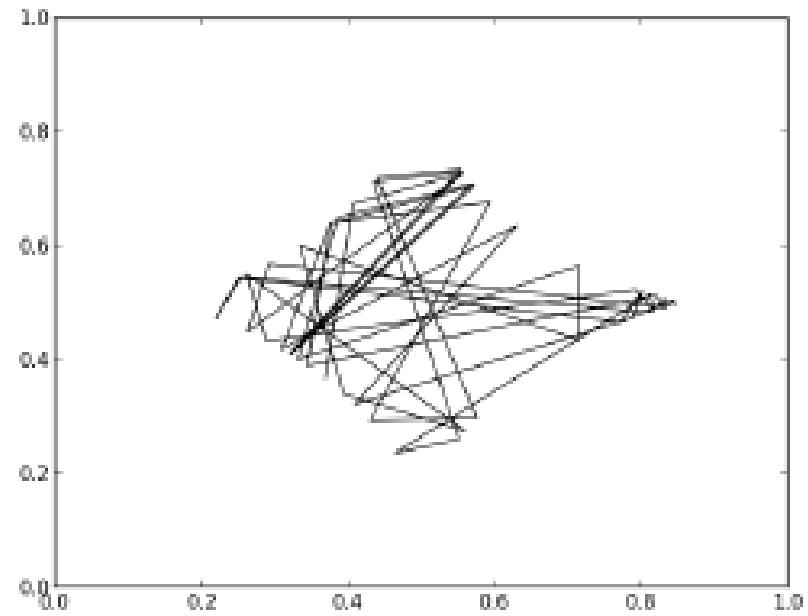
Sinai problem

Trajectory after 10 collisions



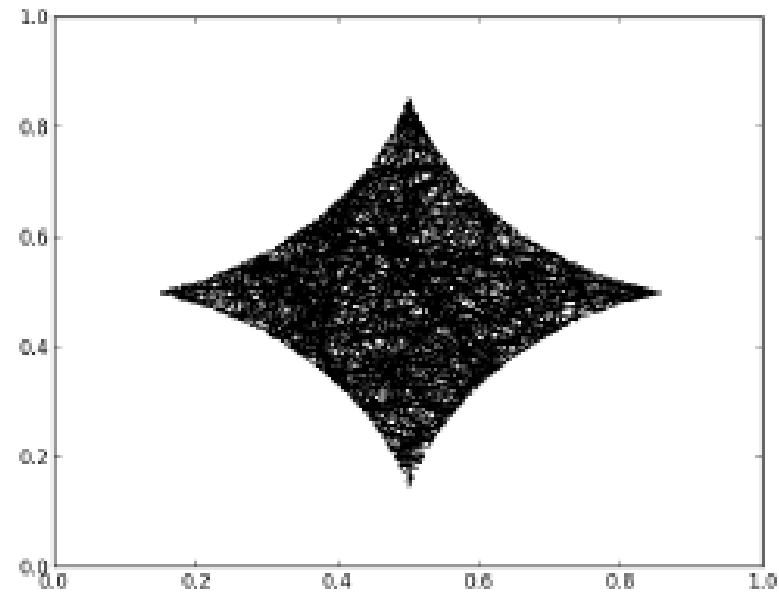
Sinai problem

Trajectory after 50 collisions



Sinai problem

Trajectory after 500 collisions



The whole phase space is covered !

Sinai problem

Probability density in phase space is uniform !

