Du
07
AVR.
2023

15h30
-
16h30

SÉMINAIRE DES DOCTORANTS DE FIME

Collisions of the supercritical Keller-Segel particle system

Institut Henri Poincaré
Salle 421

INSCRIPTION

We study a particle system naturally associated to the 2-dimensional Keller-Segel equation. It consists of N Brownian particles in the plane, interacting through a binary attraction in $\theta/(Nr)$, where r stands for the distance between two particles. When the intensity θ of this attraction is greater than 2, this particle system explodes in finite time. We assume that $N>3\theta$ and study in details what happens near explosion. There are two slightly different scenarios, depending on the values of N and θ, here is one: at explosion, a cluster consisting of precisely k_0 particles emerges, for some deterministic $k_0\geq 7$ depending on N and θ. Just before explosion, there are infinitely many (k_0-1)-ary collisions. There are also infinitely many (k_0-2)-ary collisions before each (k_0-1)-ary collision. And there are infinitely many binary collisions before each (k_0-2)-ary collision. Finally, collisions of subsets of $3,\dots,k_0-3$ particles never occur. The other scenario is similar except that there are no (k_0-2)-ary collisions.

INSTITUT HENRI POINCARÉ - UAR839

Sorbonne Université / CNRS
11 rue Pierre et Marie Curie
75231 Paris Cedex 05

HORAIRES

L'institut :
• lundi au vendredi de 8h30 à 18h,
• fermé les jours fériés.

Le musée - Maison Poincaré :
• lundi, mardi, jeudi et vendredi
de 9h30 à 17h30,
• samedi de 10h à 18h,
• fermé le mercredi et le dimanche.