Mean curvature flow and viscosity solution

Raffaele Grande (ÚTIA)

Abstract The mean curvature flow is a geometric evolution which describes the contraction of a hypersurface in the direction of its Euclidean normal with a velocity proportional to its mean curvature. This motion was widely studied not only for theoretical purposes but also for practical applications (e.g. neurogeometry and image processing). Unfortunately the hypersurface which evolves by mean curvature flow develop lead to some singularities which change the topological properties of the manifold, such as the number of connected parts. Viscosity solutions help us to deal with this type of problem.

In this talk I will briefly introduce the definitions and the properties of the mean curvature flow and viscosity solutions, then I will discuss how these solutions may be adapted in order to solve the PDE associated to this flow. Finally I will state a theorem which connects a stochastic optimal control problem with this geometrical flow.