
Velocity-jump processes: large deviations and acceleration of transport-reaction fronts

Vincent Calvez*¹

¹Unité de Mathématiques Pures et Appliquées (UMPA-ENSL) – CNRS : UMR5669, École Normale Supérieure (ENS) - Lyon – ENS de Lyon 46 allée d'Italie 69364 LYON Cedex 07, France

Abstract

I will present WKB asymptotics for a simple velocity-jump process involving free transport and reorientation at a constant rate following a Gaussian velocity distribution. I will highlight the particular scaling of large deviations, as opposed to the one for the diffusive limit. I will derive the corresponding nonlocal Hamilton-Jacobi verified by the action functional. I will present applications of this work to the acceleration of transport-reaction fronts, as opposed to constant speed of propagation of reaction-diffusion travelling waves. This is joint work with Emeric Bouin (ENSL), Emmanuel Grenier (ENSL) and Grégoire Nadin (UPMC).

*Speaker