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Anomalous transport properties of an active tracer in a crowded environment

We study analytically and numerically the transport properties of an active tracer in a schematic crowded environment, represented as a lattice gas of passive particles with hardcore interactions. We focus on diffusion coefficient and mobility of the active particle and show that our approach correctly captures surprising nonequilibrium effects, which are the signature of the activity in the system. In particular, we discuss the phenomenon of absolute negative mobility, which refers to the situation where the average velocity of the tracer is opposite to the direction of the driving force.

Role

Professor/PI

Primary author(s) : Prof. SARRACINO, Alessandro (University of Campania); Prof. BÉNICHOU, Olivier (Sorbonne Université); Dr. ILLIEN, Pierre (Sorbonne Université); Dr. RIZKALLAH, Pierre (Sorbonne Université)

Presenter(s) : Prof. SARRACINO, Alessandro (University of Campania)