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Integral formulation of run-and-tumble particles in simple confinements

Wednesday, 17 September 2025 12:10 (20 minutes)

In this talk, we present an integral equation formulation of run-and-tumble particles (RTPs) under two types of confinement: between parallel walls and within a harmonic potential. This reformulation allows us to obtain exact analytical results that are not accessible through the standard Fokker-Planck differential equation approach. A second objective is to draw analogies between the RTP model and other well-known models in statistical mechanics. Finally, we seek to understand why exact solutions are attainable in certain spatial dimensions but not in others.

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