

Seminar

Universal survival probability for a d -dimensional run-and-tumble particle – Part II

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We consider an active run-and-tumble particle (RTP) in arbitrary dimension d and compute exactly the probability $S(t)$ that the x -component of the position of the RTP does not change sign up to time t . For the most relevant case of an exponential distribution of times between consecutive tumblings, we show that $S(t)$ is independent of d for any finite time t , as a consequence of the celebrated Sparre Andersen theorem for discrete-time random walks in one dimension. Moreover, we show that this universal result holds for a much wider class of RTP models in which the speed v of the particle after each tumbling is drawn randomly from an arbitrary probability distribution.

Wednesday, Mar 11th 2020

4:00 PM (Tea/Coffee at 3:30 PM)

Seminar Hall, TIFR-H