

Anomalous Hamilton- Jacobi equation, long- tailed waiting time distributions, and travelling waves

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We present a geometric approach to the problem of propagating fronts into an unstable state, valid for an arbitrary continuous time random walk with a Fisher- KPP growth/reaction rate. We derive an integral and fractional Hamilton- Jacobi type equation for the action functional determining the position of reaction front and its speed. Our method does not rely on the explicit derivation of a differential equation for the density of particles. In particular we obtain an explicit formula for the propagation speed for the case of anomalous transport involving non- Markovian random processes.