

On the asymptotic behaviour of the elephant random walk

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In this talk we consider the so-called elephant random walk (ERW) which is a non-Markovian discrete-time random walk on \mathbb{Z} (the set of integer numbers) with unbounded memory which exhibits a phase transition from diffusive to superdiffusive behaviour. We show that a law of large numbers and a central limit theorem holds. Remarkably the central limit theorem applies not only to the diffusive regime but also to the phase transition point which is superdiffusive. Inside the superdiffusive regime the ERW converges to a non-degenerate random variable which is not normal. We also show that the ERW is almost surely well approximated by a Brownian motion. As a by-product of our result we get the law of iterated logarithm and the central limit theorem for the ERW. If time allows we are going to discuss a model with reinforcement.