On the asymptotic of a lazy reinforced random walk

Manuel González-Navarrete

Universidad de La Frontera, Temuco, Chile.

We present a complete characterization of the asymptotic behaviour of a lazy reinforced random walk (LRRW). The LRRW shows three different regimes: diffusive, critical and superdiffusive. We use an approach based on martingale theory, which allows us to prove law of large numbers, quadratic strong law, law of iterated logarithm, almost sure central limit theorem and functional central limit theorem in the diffusive and critical regimes. In the superdiffusive regime we obtain a strong convergence to a random variable, including a central limit theorem and a law of iterated logarithm for the fluctuations.

Joint work with:
Víctor Vázquez Guevara, Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla, México.
Rodrigo Lambert, Faculdade de Matemática, Universidade Federal de Uberlândia, Brasil.

References

[1] GONZÁLEZ-NAVARRETE, M. AND HERNÁNDEZ, R. *Reinforced random walks under memory lapses.* J. Stat. Phys. **185**: 3 (2021).

[2] GONZÁLEZ-NAVARRETE, M., LAMBERT, R. AND VÁZQUEZ, V.H. (2024) On the asymptotics of a lazy reinforced random walk. arXiv:2402.08033.