# Special Issue

# Maximal Entropy Random Walk

### Message from the Guest Editor

Ordinary random walks on graphs are defined such that entropy is locally maximized, i.e. the choice of the next move is uniform at each time step. If the graph is finite and regular (i.e., all nodes have the same degree), such walks have also globally maximal entropy: In the limit $T\to\indty$, all walks of length $T$ have the same probability $p \sim e^{-hT}, where $h$ is the entropy of the graph. This is no longer so for non-regular graphs. But one can always define modified next-move probabilities such that the resulting walks have uniform and globally maximal entropy. The existence of such "maximal entropy random walks" has been known since the seminal works of Bowen, Ruelle, Parry and others, but many of their fascinating properties have been discovered only recently. In particular, they found applications in community detection, link prediction, image analysis, and quasispecies evolution -- and they bear intriguing similarities with quantum mechanics, such as e.g. localization in inhomogeneous systems.


### Guest Editor

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### Deadline for manuscript submissions

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