

Recent results on unimodular networks

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We will first introduce unimodular random graphs and present several examples which will serve as illustration throughout the talk. These examples come from the theory of point processes, branching processes, random walks and self-similar discrete random sets.

Our first focus will be on deterministic dynamics on such graphs. Such a dynamic can be seen as a set of navigation rules on the nodes of the graph, when the rules are functions of the local geometry of the rooted graph. We will give a classification of these dynamics based on the properties of their stable manifolds.

The second focus will be on two new notions of dimension for such graphs, namely their unimodular Minkowski and Hausdorff dimensions. A toolbox will be presented for the analysis of these dimensions, with in particular unimodular analogues of Billingsley's lemma and Frostman's lemma.

Several further results of general interest will also be established, like for example unimodular extensions of classical results of Palm calculus and ergodic theory.

This survey is based on a series of articles in collaboration with M.-O. Haji-Mirsadeghi and A. Khezeli.