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An Introduction to First Passage Percolation

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Abstract

In First Passage Percolation (FPP), random passage times are attributed to the edges of a connected graph. Usually these passage times are given by i.i.d. non-negative random variables. FPP was first introduced by Hammersley and Welsh in 1965 as a model for the flow a fluid in a porous medium. It naturally induces a random metric on the graph and many interesting questions regarding the behavior of the optimal paths, or geodesics, have triggered intense research in the last years (see [5]). The goal of these lectures is to provide an introduction to the subject, discussing some of the basic ideas and techniques in the topic.

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