A discrete Hughes model for pedestrian flow on graphs

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In this talk, we introduce a discrete time-finite state model for pedestrian flow on a graph in the spirit of the Hughes dynamic continuum model. The pedestrians, represented by a density function, move on the graph choosing a route to minimize the instantaneous travel cost to the destination. The density is governed by a conservation law whereas the minimization principle is described by a graph eikonal equation. We show that the discrete model is well-posed and the numerical examples reported confirm the validity of the proposed model and its applicability to describe real situations.

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