Travelling waves on lattices defined by car-following models

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Abstract

We consider the dynamics of a Bando discrete car-following model on an infinite highway. This model take the form of a lattice differential equation system, whose travelling wave solutions can be defined by a conservative advanced differential equation boundary value problem. When reaction times are included, advanced-retarded FDE problems arise. We use numerical continuation techniques to investigate the travelling wave solutions which arise, and their dependence on the parameters, the consequences for the traffic flow, and the similarities and differences from continuous traffic flow models.