Analytical solutions of pattern formation for a class of discrete Aw–Rascle–Zhang traffic models - DTU Orbit (14/03/2019)

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A follow-the-leader model of traffic flow is considered in the framework of the discrete Aw–Rascle–Zhang model which is a combination of the nonlinear General Motors model and the Optimal Velocity model. In this model, which is studied on a closed loop, stable and unstable pulse or jam patterns emerge. Analytical investigations using truncated Fourier analysis show that the appearance of the jam patterns is due to supercritical Hopf bifurcations. These results are confirmed and supplemented by numerical simulations. In addition, a link between the discrete Aw–Rascle–Zhang model and the modified Optimal Velocity model is established.

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