A Two-Lane Cellular Automata Model with Influence of Next-Nearest Neighbor Vehicle

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Abstract: In this paper, we propose a new two-lane cellular automata model in which the influence of the next-nearest neighbor vehicle is considered. The attributes of the traffic system composed of fast-lane and slow-lane are investigated by the new traffic model. The simulation results show that the proposed two-lane traffic model can reproduce some traffic phenomena observed in real traffic, and that maximum flux and critical density are close to the field measurements. Moreover, the initial density distribution of the fast-lane and slow-lane has much influence on the traffic flow states. With the ratio between the densities of slow lane and fast lane increasing the lane changing frequency increases, but maximum flux decreases. Finally, the influence of the sensitivity coefficients is discussed.

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