

## A Modified Sensitive Driving Cellular Automaton Model

GE Hong-Xia, DAI Shi-Qiang, DONG Li-Yun, and LEI Li

Shanghai Institute of Applied Mathematics and Mechanics, Shanghai University, Shanghai 200072, China

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**Abstract:** A modified cellular automaton model for traffic flow on highway is proposed with a novel concept about the variable security gap. The concept is first introduced into the original Nagel-Schreckenberg model, which is called the non-sensitive driving cellular automaton model. And then it is incorporated with a sensitive driving NaSch model, in which the randomization brake is arranged before the deterministic deceleration. A parameter related to the variable security gap is determined through simulation. Comparison of the simulation results indicates that the variable security gap has different influence on the two models. The fundamental diagram obtained by simulation with the modified sensitive driving NaSch model shows that the maximum flow are in good agreement with the observed data, indicating that the presented model is more reasonable and realistic.

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**Key words:** traffic flow, cellular automaton model, sensitive behavior, variable security gap

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