On a traffic problem: Filippov system formulation for N cars

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We consider a microscopic car-following model of road traffic. In our previous work we investigated oscillatory solutions to the model. The analysis showed that these solutions may not be physical since an event which can be interpreted as a collision with the preceding car. The natural action of a driver at that moment would be to overtake the slower car. We proposed a model of overtaking. Later on, we formulated equivalent model for three cars on the road as a Filippov system, i.e. ordinary differential equations with discontinuous righthand sides. In our presentation we extend such formulation to N-cars systems, with $N \geq 3$, and give some simulation results with particular attention to oscillatory solutions.