

Accepted Manuscript

An extended car-following model considering the self-stabilizing driving behavior of headway

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PII: S0378-4371(18)30586-7
DOI: <https://doi.org/10.1016/j.physa.2018.05.042>
Reference: PHYSA 19582

To appear in: *Physica A*

Received date : 9 November 2017
Revised date : 27 March 2018

Please cite this article as: F. Sun, J. Wang, R. Cheng, H. Ge, An extended car-following model considering the self-stabilizing driving behavior of headway, *Physica A* (2018), <https://doi.org/10.1016/j.physa.2018.05.042>

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Highlights

1. Considering the self-stabilizing driving behavior of headway, an extended car-following model is presented.
2. By using the linear analysis method, the stability condition is obtained.
3. The Burgers, KdV and modified KdV equations are derived to describe the evolutions of traffic density waves.
4. The numerical simulations are presented to show the valid of the analytical results and the effect of the self-stabilizing driving behavior of headway.

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