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A novel approach to interaction detection in vehicular traffic

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Knowledge of an interaction range in particle systems, especially in vehicular traffic could significantly contribute to modeling of traffic flow. Combination of simulation methods, analytical predictions of headway distribution, and correlation analysis led to several remarkable observations. We observe, that interaction range depends on both resistivity and type of repulsive potential. Moreover we introduce a novel method for detection of number of actively followed vehicles based on perturbation function. Beside that, significant progress has been made in theory of balanced density functions, which can be of help in derivation of distribution of clearances in vehicular systems.

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