

Accepted Manuscript

Modeling vehicular traffic networks. Part I

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PII: S0378-4371(18)30740-4
DOI: <https://doi.org/10.1016/j.physa.2018.06.016>
Reference: PHYSA 19710

To appear in: *Physica A*

Received date: 23 March 2018

Revised date: 30 March 2018

Please cite this article as: D. Otero, D. Galetti, S.S. Mizrahi, Modeling vehicular traffic networks. Part I, *Physica A* (2018), <https://doi.org/10.1016/j.physa.2018.06.016>

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- The theory of stochastic matrices is adapted to describe the evolution of vehicular traffic flow within a network.
- We have illustrated the theory with numerical examples, and have discussed carefully three models: (1) a conservative network, (2) a dissipative, and (3) a non-linear one.
- As illustrative examples we have presented the formal expressions and numerical values for the transient and stationary regimes of the traffic flow, for each model
- Another manuscript *Urban vehicular traffic: fitting the data using a hybrid stochastic model. Part II*, following this one, is being concomitantly submitted for publication in this same journal.
- In part II we present the practical use of a hybrid model that fits, satisfactorily, the data of the traffic flow as collected from a sector of the city of Tigre, localized inside the province of Buenos Aires, Argentina.

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