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A model of irreversible jam formation in dense traffic

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**Highlights:**

- A generalized TASEP, with two hopping probabilities, is used to model irreversible jam formation on finite open chains.
- The model exhibits three stationary phases, with unusual non-equilibrium phase transition between two of them.
- Stationary properties of the boundary perturbed completely jammed phase are studied analytically.
- A random walk theory is developed for the time evolution of the gaps between jammed clusters.
- Three finite-size scales are found for the stationary lifetime of the inter-cluster gaps on approaching the completely jammed phase.
- The analytical results are supported by extensive Monte Carlo simulations.

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