

**Abstract for GR-TR Conference on Statistical Mechanics
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Topic: Traffic Flow

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A Cellular Automata Model for Ant Trails

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We investigate the uni- and bi-directional ant traffic flow in an ant trail by using one-dimensional cellular automata model. It is considered that ants communicate each other by dropping a chemical, called pheromone, on the substrate. Apart from the studies in the literature, it is considered in the model that a) ant colony consists of two kind of ants, good and poor smelling ones; b) ants might make U-turn for some special cases. For some values of densities of good- and poor-smelling ants, the flux and mean velocity of the colony are studied as a function of density and evaporation rate of pheromone. It is shown that phase transition occurs for some special values of parameters used in the model.