

Effect of road block on traffick flow

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A road with two lanes in the same direction with no off-ramps or on-ramps is considered. The model is used in which the traffic flux depends only on the traffic density. The traffic density satisfies a first order quasi-linear partial differential equation in conserved form. A road block is set up at time $t = 0$ which reduces the two lanes to one lane. When the traffic density reaches a critical value which depends on the ratio of the speed limit in the open road to the speed limit in the road block a shock forms at the entrance to the road block. The shock travels backwards from the road block into the oncoming traffic and is such that the traffic flow through the road block is maximised. The road block is removed after a time T . Using the properties of characteristic curves the maximum length of the tailback in light traffic after the roadblock is removed is obtained. For heavy traffic the tailback continues to grow indefinitely and the effect of the road block never clears.