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Electric bicycle management and control at a signalized intersection

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Abstract: Electric bicycle (EB) has been one popular traffic tool in urban traffic system, but it has some disorder motion behaviors at a signalized intersection. In this paper, we propose a strategy to control each EB's motion at a signalized intersection, and design some rules to explore each EB's motion and the impacts of the proposed strategy on each EB's motion at the signalized intersection. The numerical results indicate that the proposed strategy can enhance the operational efficiency at the signalized intersection. The results can help administrator to better manage the EB's motion at the signalized intersection.

Keyword: Electric bicycle, retrograde, red-light running, strategy, signalized intersection.

1. Introduction

To date, electric bicycle (EB) has been a popular traffic tool in China, where the number of EBs reached 31 million in 2012 and 36.8 million in 2015 [1]. Since EB has some prominent merits (e.g., low cost, small size, etc.), many people (especially commuters) have changed their traffic tools.

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