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Multi-Path Signal Synchronization Model with Phase Length Constraints

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Abstract : To improve the level of service (LoS) of urban arterial systems containing a series of signalized intersections, a proper design of offsets for all intersections associated is of great importance. The MAXBAND model has been the most common approach for this purpose. In this paper, we propose a MAXBAND model with phase constraints so that the lengths of the phases in a cycle are variable. In other words, the length of a cycle is also variable in our setting. We conduct experiments on a real-world traffic network, having several major paths, in Taiwan for numerical evaluations. Actual traffic data were collected through on-site experiments. Numerical evidences suggest that the improvements are around 32%, on average, in terms of total delay of the entire network.

Keywords : arterial progression, MAXBAND, signal control, offset
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