THE MULTI-CLASS SCHEDULE-BASED TRANSIT ASSIGNMENT MODEL IN NETWORK WITH UNCERTAINTIES

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ABSTRACT

This paper proposes a new reliability-based dynamic transit assignment model for stochastic networks with multi-user classes. Different passengers' responses to uncertainties in transit network are investigated by distinguishing passengers' attitude toward risks on unreliable travel time. Various sources of uncertainties leading to unreliable passenger travel time are categorized into endogenous and exogenous uncertainties and discussed explicitly. Network uncertainties are considered by introducing safety margin to ensure punctual requirements by different classes of passengers. The schedule-based transit assignment method is adopted for modeling the problem concerned. The proposed model can be formulated as a fixed-point problem, and solved by a heuristic algorithm. The numerical example of a case study in Hong Kong demonstrates the performance of the proposed model and solution algorithm together with some important insights.