

A splitting rate model of traffic re-routeing; with application to the design of congestion-reducing traffic control systems

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Location: Room 163, Skempton (Civil Eng.) Bldg, Imperial College London

Abstract

A new mathematical model of traffic + control dynamics is described. How the new model may be used to reduce congestion in cities is outlined. A new dynamical model of day-to-day or within-day re-routeing using splitting rates at nodes or node-exit flows (rather than route flows or link flows) will be presented. The dynamical model gives rise to a sequence of link flow vectors which converges to a set of approximate Wardrop equilibria. A special dynamical signal green-time re-allocation model is added. The talk will illustrate how the above dynamical models may be utilised to design signal timings which make the best use of limited network capacity.

Biography

Mike has been working on the design of urban network control and management systems and the necessary decision support modelling (including mathematical models) for more than 30 years. The twin focus has been: (a) to develop new mathematics and to make better use of existing mathematics, aiming to improve the control and management of urban traffic congestion in the future, and (b) to discuss these new possibilities with signal control engineers and other policy-makers. In 2007 Mike was presented with the Robert Herman Lifetime Achievement Award by the Informs (The Institute for Operations Research and the Management Sciences) Transportation Science and Logistics Society; "for fundamental and sustained contributions in transportation science and logistics".