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# The Vehicle Routing Problem with Time Windows and Time-Dependent Road-Network Information

Hamza Ben Ticha<sup>1,2</sup>, Nabil Absi<sup>1,2</sup>, Dominique Feillet<sup>\*1,2</sup>, Alain Quilliot<sup>3</sup>, and Tom Van Woensel<sup>4</sup>

<sup>1</sup>Laboratoire d'Informatique, de Modélisation et d'optimisation des Systèmes (LIMOS) – CNRS : UMR6158 – F-13541 Gardanne, France

<sup>2</sup>Ecole des Mines de Saint-Etienne (EMSE) – Ecole des Mines de Saint-Etienne – Campus Georges Charpak Provence, F-13451 Gardanne, France, France

<sup>3</sup>Laboratoire d'Informatique, de Modélisation et d'optimisation des Systèmes (LIMOS) – CNRS : UMR6158, Université Clermont Auvergne – Bât ISIMA Campus des Cézeaux BP 10025 63173 AUBIERE cedex, France

<sup>4</sup>Eindhoven University of Technology – Netherlands

## Abstract

In the literature, most approaches proposed to solve time-dependent vehicle routing problems assume that for each pair of interest points (e.g., depot, customers...), a travel-time function is known. Almost no paper investigates how these functions can be computed from travel times in the underlying road network. Furthermore, most of them neglect the possibility that different paths could be selected in the road network depending on the compromises they offer between cost (distance) and travel-time. In this presentation, we propose the first exact solution approach for these problems that starts from travel-time function expressed at the level of the road network. Computational study carried out on realistic instances and on instances derived from a real road-network illustrate the important impact of the proposed modeling on solution values.

**Keywords:** vehicle routing, column generation, shortest path, road, network, time, dependent travel times

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\*Speaker