ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

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SEMINAR OF NUMERICAL ANALYSIS

➢ **WEDNESDAY 16 DECEMBER 2015 - ROOM MA A1 10 - 16h15**

Prof. Michel BIERLAIRE (EPFL, Lausanne) will present a seminar entitled:

"The behavioral dimension of optimization"

Abstract:

The mathematical modeling of choice behavior has been an active field of research for the last 40 years. In addition to solid theoretical foundations (that motivated the Nobel Prize awarded to Daniel McFadden in 2000), these models have been applied and validated in many concrete applications, in particular in the context of marketing and transportation. They are the modern instruments for a detailed representation of the "demand". Still, their complexity lead to mathematical formulations that are highly non convex in the explanatory variables. Mixed Integer Linear Programs (MILP) are optimization problems with discrete variables that are used in many applications to design and configure the "supply". In this lecture, we present a recent methodology that allows to integrate in the same framework the supply and the demand, that is, the optimization of the operations of a system and the advanced behavioral models. The advantages of this approach include the following:
- It is general, and not designed for a specific application or context.
- It is flexible, as any random utility model can be considered to represent the demand.
- It is scalable, in the sense that the level of complexity can be adjusted.
- It is integrated, in the sense that the demand and supply models are not considered sequentially, in a fixed point or equilibrium framework.
- It leads to a linear discrete optimization model that can be solved efficiently by modern solvers.

Lausanne, 9 December 2015/DK/cr

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