



Séminaire des étudiants du CIRRELT Students Seminar\*

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Étudiante au doctorat

sous la direction des professeurs Louis-Martin Rousseau et Bernard Gendron  
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## GRAMMAR AND NETWORK BASED COLUMN GENERATION FOR MULTI-ACTIVITY TOUR SCHEDULING PROBLEMS

**ABSTRACT:** A grammar and network based column generation model to solve personalized tour scheduling problems in a multi-activity context will be presented. The master problem is based on a set partitioning problem while the pricing subproblems are composed in a two-phase procedure. First daily shifts are modeled with context-free grammars to be later assembled into tours using a shortest path problem with resource constraints. The model is flexible enough to allow different start times, lengths and days-off patterns, as well as multiple breaks, and continuity and discontinuity in labor requirements. In order to reach integrality, the column generation procedure is embedded into a branch-and-price method. The model is tested with instances up to 5 working activities, one-week planning horizon, and different scenarios. The results show that our approach is able find for all the instances high-quality solutions with an optimality gap lower than 1%.

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VENDREDI / FRIDAY

7 février 2014, à 12h

February 7<sup>th</sup>, 2014, at 12:00

Salle / Room 5441

Pavillon André-Aisenstadt

Université de Montréal

*Pizza et boisson gazeuse fournies*

*Pizza and soft drink offered*

Inscription obligatoire avant le 7 février / Registration required before February 7

<https://symposia.cirrelt.ca/Sem-Etudiants/register>

\* Étudiants de 2<sup>e</sup> et 3<sup>e</sup> cycle intéressés à présenter / Graduate students interested in presenting : Antoine.Legrain@cirrelt.ca

