



## Arthur Mahéo

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### BUSPLUS: HUB AND SHUTTLE PUBLIC TRANSIT SYSTEM FOR CANBERRA

**Abstract:** Canberra is a planned city designed by American architect Walter Griffin in 1913. It features a large number of semi-autonomous towns separated by greenbelts. As a result, Canberra covers a wide geographic area, which makes public transportation particularly challenging. We propose to tackle the problem of off-peak transportation by using a Bus and Shuttle network where buses will run between major hubs throughout the city at regular intervals, while a fleet of on-demand shuttles will take care of the "last mile" problem. We first propose a model based on the Hub-Arc Location Problem (HALP). The HALP can be seen as a two-level decision problem deciding which arcs to open first and then how to route the flow at minimum cost. As such, its structure appears ideally suited for Benders decomposition. Benders decomposition is a well-known partitioning method to solve large mixed integer programs. We develop a Benders decomposition approach with the following improvements: cut disaggregation, Pareto optimal sub-problem, and core point update.

**Note:** Arthur Mahéo is a PhD student at the College of Engineering and Computer Science in Canberra. He is presently doing an internship at CIRRELT under the supervision of Jean-François Cordeau.

MERCREDI / WEDNESDAY

12 octobre 2016 /  
October 12th, 2016  
10h30

Salle / Room 5441  
Pavillon André-Aisenstadt  
Université de Montréal

Ouvert à tous / Open to all

**Organisateur / Organizer**  
**Jean-François Cordeau**

