



Séminaire du CIRRELT Seminar

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Benders Decomposition and Fair Risk Distribution for the Hazmat Transport Network Design Problem

Abstract: The shipment of hazardous materials is necessary for most countries and many of these products are flammable, explosive or even radioactive. To minimize the risk in the network, the government wants to forbid certain roads and has to anticipate the carriers' reaction who want to minimize the transportation costs for their shipments. Therefore, the problem is modeled as a bilevel problem where the leader is the government and the follower the carriers. We propose a Benders Decomposition method to efficiently solve the classical hazmat transport network design problem. Since society also requests a fair distribution of risk by the authorities, we introduce a population-based risk definition that evaluates the risk in each population center. Moreover, we propose different objective functions for equilibrating the risk and extend the problem by considering several transportation modes. In the numerical results, we show that both objectives have a positive convex correlation and therefore a significant improvement in risk distribution can be achieved at the cost of just a small increase in total risk.

Note: Pirmin Fontaine is a postdoctoral student at CIRRELT, under the supervision of Professor Teodor Gabriel Crainic.

JEUDI / THURSDAY

26 janvier 2017 /
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14h

Salle / Room 5441
Pavillon André-Aisenstadt
Université de Montréal

Ouvert à tous / Open to all

Organisateur / Organizer
Teodor Gabriel Crainic



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