

## **Abstract**

A first part of this talk will be devoted to a very short presentation of a couple of applications I am working on.

Then I will present an exact solution method for the network flow problem with piecewise linear costs. This problem is fundamental within supply chain management and extends the fixed-charge transportation problem in a straightforward way. Two Dantzig -Wolfe reformulations are initially considered and their relative strength with respect to the linear programming relaxation is investigated both theoretically and practically through tests on a number of instances. Next, I present an exact method based on one of the two reformulations to which cover inequalities, coming from GUB constraints, are added when violated. Computational experiments show that this solution method compares favorably to a standard MIP solver with a reduction of 75% of the runtime on the largest instances tested.