

***Solving the Single-Vehicle Routing Problem
with Stochastic Demands***

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The Single-Vehicle Routing Problem with Stochastic Demands (SVRPSD) consists in finding a tour for a single capacitated vehicle delivering goods to a set of customers with stochastic demands. A key feature of the problem is that whenever the demand of a customer is found to exceed the remaining stock on the vehicle, it must replenish its stock by going back to the depot. These trips back to the depot increase the length of the route effectively performed by the vehicle. The objective in the SVRPSD is to find the route that yields the lowest expected total cost when these trips to the depot are considered.

In this talk, we will present both an exact and a heuristic solution methods for the SVRPSD. Both methods rely heavily on concepts of the *local branching* approach proposed by Fischetti and Lodi to tackle mixed integer programs effectively. Computational results on a set of small to fairly large benchmark instances will be reported and discussed.

(Joint work with Walter Rei and Patrick Soriano)