PIP Solver 2.0: Theory and Applications.

In this talk, I will introduce the version 2.0 of the PIP (for Primal Integer Programming) solver, which finds at each iteration a descent direction leading to an improved integer solution, most of the time with no branching at all, until a near optimal integer solution is found. The solver can integrate primal exact and heuristic techniques in a highly fluid manner and thus we conciliate both communities. The theory behind will be discussed and illustrated. A good part of the talk will be dedicated to the implementation and architecture of the solver and also to discuss some of its successful applications to transportation problems.