

# The traveling salesman polytope revisited

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**(joint work with Yves Pochet)**

The Traveling Salesman Polytope is the convex hull of all the incidence vectors of hamiltonian cycles of a complete graph. The partial description of that polytope by linear inequalities has been the topic of a great number of papers. Unfortunately it is quite difficult, in those papers, to understand the reason of the validity of the described inequalities. Most of the known families of inequalities, i.e., comb, path, star, bipartition, binested, ladder inequalities are described in term of coboundaries of sets. I will try to show an intuitive way to understand these inequalities. In particular we will understand why these sets are always separated into two families: the “handles” and the “teeth”. A general framework for these inequalities will be given.