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On the Proof Complexity of Integer Programming Solvers

We discuss recent progress on understanding the complexity of modern integer programming solvers in optimization using tools from propositional proof complexity. In particular, we focus on the recent introduction and study of the so-called "Stabbing Planes" proof system (also known as "Branching Proofs") which very tightly model the execution of such solvers. Both lower bounds and upper bounds on various complexity measures of Stabbing Planes proofs will be discussed, as well as the close relationship between Stabbing Planes proofs and Cutting Planes proofs.