The study of the complexity of proof systems for quantified propositional logic has recently gained attention. It bears the same relationship to algorithms for QBF solving as propositional proof complexity to SAT solving. In this paper, the quantified analog of Resolution, i.e., Q-Resolution is studied. The size of tree-like proofs in Q-Resolution is characterized by a Prover-Delayer-game, inspired by a similar characterisation of the proof size in classical tree-like Resolution. This constitutes the first transfer of a lower bound technique for classical proof systems to QBF proof systems. The usefulness of the techique is demonstrated by re-proving lower bounds for two previously known hard examples for tree-like Q-Resolution, in particular the formulas of Kleine Büning et al. [1]

References

[1] H. Kleine Büning, M. Karpinski and A. Flögel, Resolution for quantified Boolean formulas, Inform. and Comput. **117** (1995), no. 1, 12–18. MR1318810 (95j:03021)