Space Complexity in Propositional Calculus
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Abstract
We study space complexity in the framework of prepositional proofs. We consider a natural model analogous to Turing machines with a read-only input tape, and such popular prepositional proof systems as resolutions, polynomial calculus and Frege systems. We propose two different space measures, corresponding to the maximal number of bits, and clauses/monomials that need be kept in the memory simultaneously. We prove a number of lower and upper bounds in these models as well as some structural results concerning the clause space for resolution and Frege systems.