

Polynomial-Space Completeness of Reachability for Succinct Branching VASS in Dimension One*

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Abstract

Whether the reachability problem for branching vector addition systems, or equivalently the provability problem for multiplicative exponential linear logic, is decidable has been a long-standing open question. The one-dimensional case is a generalisation of the extensively studied one-counter nets, and it was recently established polynomial-time complete provided counter updates are given in unary. Our main contribution is to determine the complexity when the encoding is binary: polynomial-space complete.

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