

COMPLEXITY OF MAXIMUM AND MINIMUM FIXED POINT PROBLEM IN BOOLEAN NETWORKS

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Abstract: Given a fixed integer k , the maximum (minimum) fixed point problem is the following: given a signed graph G , is there a Boolean network with at least (most) k fixed points and with G as interaction graph? Firstly, we prove that the maximum fixed point problem is NP-complet if $k > 1$ and polynomial otherwise. Secondly, we prove that the minimum fixed point problem is NEXPTIME-complet for every k . We also present complexity results when k is a part of the input.