Term satisfiability problem for two-element algebras is in QL or is NQL-complete

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We present a complete classification of the complexity of the SAT problem for any two-element algebra. Cases of terms and of polynomials have being considered. We show that for any fixed two-element algebra the problem is either in QL or NQL-complete.

We show that the complexity of the considered problems, parameterized by an algebra, are determined by the clone of term operations of the algebra.

We show the following:

Theorem 1 *TermSat for the clone $\mathcal{C}$ is NQL-complete if and only if one of the following holds*

- $\mathcal{C} = Clo(2, \wedge, \vee, \neg)$,

- $\mathcal{C} = Clo(2, d, \neg)$,

where $d(x, y, z) = (x \wedge y) \vee (y \wedge z) \vee (z \wedge x)$.
Otherwise, TermSat for C is in QL.