Computing in direct powers

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We will investigate the complexity of some computational problems in direct powers of algebraic structures. For an example, fix a finite algebra A (a group, a ring, a lattice,...). The Subpower Membership Problem for A is the following:

INPUT tuples a_1, \ldots, a_k and b in A^n

PROBLEM Is b in the subalgebra of A^n generated by a_1, \ldots, a_k ?

There are algebras known for which this decision problem is Exptimecomplete. However Ross Willard observed that for groups and rings there is a polynomial-time algorithm based on classical computational group theory. In 2007 he asked whether the Subpower Membership Problem is in P for Mal'cev algebras in general. We give some partial results. The general question still remains open.