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Alexander A. Mikhalev* (aamikhalev@mail.ru), Faculty of Mechanics and Mathematics,
Moscow State University, Moscow, 119991, Russia. *Primitive and almost primitive elements of free non-associative algebras.*

A variety of linear algebras over a field is Schreier if any subalgebra of a free algebra of this variety is free in the same variety of algebras. A system of elements of a free algebra is primitive if it is a subset of some set of free generators of this free algebra. We consider free Lie algebras and superalgebras, free Lie p -algebras and p -superalgebras, free non-associative algebras, free commutative non-associative algebras, and free anti-commutative non-associative algebras. Algorithms to recognize primitive systems of elements and algorithms to construct complements of primitive systems of elements with respect to free generating sets are constructed and implemented. An almost primitive element of a free algebra F is an element which is not primitive in F , but which is primitive in any proper subalgebra of F containing it. A series of almost primitive elements of free algebras of Schreier varieties is constructed. We obtain criteria for a homogeneous element to be almost primitive. This talk is based on joint works with C.Champagnier, A.A.Chepovskii, A.V.Klimakov, A.V.Mikhalev, U.U.Umirbaev, J.-T.Yu, and A.A.Zolotykh. (Received March 01, 2011)