On Novikov superalgebras, Novikov–Poisson algebras, Poisson algebras and metabelian Poisson algebras

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Our research is on some properties of the following algebras: Novikov superalgebras, Novikov–Poisson algebras, Poisson algebras and metabelian Poisson algebras. All of these algebras are nonassociative algebras, and the main aim of this talk, is to introduce some methods for constructing linear basis for certain (free) algebras: (i)Construct a set B and define bilinear maps on the linear space kB with basis B such that kB is isomorphic to the considered (free) algebra. For instance, free associative algebra, free differential algebras, free nonassociative (commutative) algebras, free (Generic) Poisson algebras, free associative diagebra, free bicommutative algebras, ... (ii)Construct a linear generating set B for a free algebra $\mathcal{A}$, then define a homomorphism φ from $\mathcal{A}$ to an algebra $\mathcal{A}'$ in this variety with known basis, and show that $\varphi(B)$ is linear independent in $\mathcal{A}'$. For instance, free Lie algebra, free Novikov (super)algebra, free Novikov-Poisson algebra, free Leibniz algebra,... (iii) Use rewriting system such as a Gröbner–Shirshov basis to help to construct a linear basis (normal form). For instance, free right-symmetric algebra, free Leibniz algebra, algebras (semigroups) defined by generators and relations such as plactic monoid, symmetric group and so on.