Abstract

Novikov algebras initially appeared in the study of Poisson brackets and, independently, in formal variational calculus.The operad Nov governing the variety of Novikov algebras turns out to be useful in the following general construction.Given a class Var of linear algebras with a family of binary operations (e.g., associative, alternative, Jordan, or Lie algebras, Poisson algebras) equipped with a derivation, one may construct a derived class of systems based on the same linear spaces relative to new operations: $x\prec y = xd(y)$, $x\succ y = d(x)y$, where d is the derivation. What are the identities that hold on all such systems? We will show that the corresponding operad may be obtained as a Manin white product of operads Var and Nov. As an example, we define non-commutative analogues of Novikov algebras via the derived operad of associative algebras. We will prove that every noncommutative Novikov algebra embeds into an appropriate associative differential algebra.