1054-16-104 **Arkady Berenstein*** (arkadiy@math.uoregon.edu), 4936 Mahalo Drive, Eugene, OR 97405, and **Vladimir Retakh** (vretakh@math.rutgers.edu), 110 Frelinghuysen Road, Piscataway, NJ 08854-8019. *Lie algebras and Lie groups over noncommutative rings.*

In my talk I will introduce a version of Lie algebras and Lie groups over noncommutative rings.

For any Lie sub-algebra g of an associative algebra A and any associative ring F, I will define a Lie algebra (g, A)(F) functorially in F and A. In particular, if F is commutative, the Lie algebra (g, A)(F) is simply the loop Lie algebra of g with coefficients in F.

In the case when g is semisimple or Kac-Moody, I will explicitly compute (g, A)(F) in terms of commutator ideals of F (surprisingly, these ideals have previously emerged as building blocks in M. Kapranov's approach to noncommutative geometry).

To each Lie algebra (g, A)(F) one associates a “noncommutative algebraic” group of automorphisms. I will conclude my talk with examples of such groups and with the description of ”noncommutative root systems” of rank 1. (Received September 15, 2009)