

Title -- Frobenius Lie algebras and universal deformation formulas

Abstract -- A Lie algebra  $L$  is Frobenius if there exists a linear functional  $F$  in  $L^*$  such that the skew bilinear form  $(x,y) \mapsto F([x,y])$  is non-degenerate. Frobenius Lie algebras were introduced in the 1970s by Ooms who showed, in particular, that the universal enveloping algebra  $U(L)$  admits a faithful simple representation when  $L$  is Frobenius. Such algebras also have applications to invariant theory and the geometry of coadjoint orbits in  $L^*$ . Deformation theorists are interested in Frobenius Lie algebras because each provides a solution to the classical Yang-Baxter equation, which in turn quantizes to a universal deformation formula, i.e. a Drinfel'd twist which deforms any algebra which admits an action of  $L$  by derivations. This talk will be an introduction to Frobenius Lie algebras and their connection to deformation theory. Concrete examples illustrating the theory will be the main focus of the talk, but generalizations and open questions for future research will be addressed as well.