



MAFIA - the seminar you can't refuse

Hom-Lie algebras

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Abstract: The first instances of Hom-Lie algebras appeared in the literature in 1990s, in attempts to "quantize", in a sense (albeit in a sense different from quantum groups) some ubiquitous symmetries appearing in physics, such as, for example, the Virasoro algebra.

On the abstract level, Hom-Lie algebras are defined as a generalization of Lie algebras, where the the Jacobi identity is "twisted" by a linear map. Despite such innocently looking, at the first glance, generalization, most of direct attempts to extend the Lie theory to a Hom-Lie one meet considerable difficulties of combinatorial character.

We will discuss some of such attempts: the analogs of Poincare-Birkhoff-Witt and Ado theorems, as well as (if time will permit) description of Hom-Lie structures on some important Lie algebras, such as classical simple and Kac-Moody, and relationship with Jordan algebras.