Seminário/Talk

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Local: Sala de reuniões do Departamento de Matemática (Bloco VI)

When Hom-Lie structures form a Jordan algebra

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Resumo/Abstract:

A Hom-Lie structure on a Lie algebra is a linear map f satisfying the Hom-Jacobi identity $[[x, y], f(z)] + [[z, x], f(y)] + [[y, z], f(x)] = 0$. Recently such structures were studied a lot in the framework of a more general notion of Hom-Lie algebras, a twisted variant of Lie algebras.

Earlier Hom-Lie structures were computed for various classes of "interesting" Lie algebras – classical simple Lie algebras, Kac-Moody algebras, Lie algebras of vector fields. It was observed that in all these cases the space of Hom-Lie structures is closed with respect to the anticommutator; in other words, forms a (special) Jordan algebra.

We try to give a conceptual explanation of this empirical fact. Somewhat unexpectedly, this turns out to be related with several well-researched questions in Lie algebra theory, such as the classical Yang-Baxter equation, decomposition of an algebra into the sum of subalgebras, and existence of subalgebras of codimension 1.