Lie homologies and Free Jordan algebra.

Iryna Kashuba (Univ. Sao Paulo)

Abstract: We study a structure of homogeneous components of the free Jordan algebra $J(D)$ in D generators over a field of characteristic zero, namely its structure as a $GL(D)$-module. It is done by employing the prominent Tits–Kantor–Koecher construction which associates to a Jordan algebra a Lie algebra acted on by sl_2 by means of derivations. We conjecture that the condition for the homology groups H_k, $k>= 0$, of the Lie algebra obtained by $J(D)$ by means of TKK construction to be trivial, describe the character if $J(D)$. We will discuss several equivalent versions of the conjecture, what is proved and how we can apply it to Jordan theory, in particular to the special identities in $J(D)$.

This is joint work with Olivier Mathieu.