

СЕМИНАР „АЛГЕБРА И ЛОГИКА”

Драги колеги,

Следващото заседание на семинара ще се проведе
на 11 април 2014 г. (петък) от 11:00 часа
в зала 578 на ИМИ – БАН.

Доклад на тема

Locally Nilpotent Linear Derivations of Free Metabelian Associative Algebras

ще изнесе

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Поканват се всички желаещи.

От секция „Алгебра и логика” на ИМИ – БАН

<http://www.math.bas.bg/algebra/seminarAiL/>

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Abstract

This is a joint work with Rumen Dangovski and Vesselin Drensky.

A nonzero locally nilpotent linear derivation δ of the polynomial algebra $K[X_d]$ over a field K of characteristic 0 is called a Weitzenböck derivation. The classical theorem of Weitzenböck states that the algebra of constants $K[X_d]^\delta$ is finitely generated. Similarly one may consider the algebra of constants $F_d(\mathfrak{B})^\delta$ of a locally nilpotent linear derivation δ acting on a finitely generated algebra which is relatively free in a variety \mathfrak{B} of algebras over K . Now the algebra of constants is usually not finitely generated.

In the case of associative algebras there is a dichotomy. If the variety of algebras \mathfrak{B} satisfies a polynomial identity which does not hold for the algebra $U_2(K)$ of 2×2 upper triangular matrices, then $F_d(\mathfrak{B})^\delta$ is finitely generated (Drensky, 2004). Otherwise, if δ is not zero, then $F_d(\mathfrak{B})^\delta$ is not finitely generated (Drensky and Gupta, 2005). From this point of view the free associative metabelian algebra $F = F(\mathfrak{M})$ is crucial for the investigation.

We show that the vector space of the constants $(F')^\delta$ in the commutator ideal F' is a finitely generated $K[X_{2d}]^\delta$ -module. For small d , we calculate the Hilbert series of $(F')^\delta$ and find the generators of the $K[X_{2d}]^\delta$ -module $(F')^\delta$. To calculate the Hilbert series we use a version of the Elliot-McMahon method.