



UNIVERSITÀ
DEGLI STUDI DI BARI
ALDO MORO

DIPARTIMENTO
DI MATEMATICA

IL DIRETTORE

Seminari di Matematica

Nell'ambito delle attività seminariali del Dipartimento di Matematica,
su proposta del **Prof. Roberto LA SCALA**,

il **Prof. Dmitri PIONTKOVSKI**,
Professore Visitatore INdAM,
Higher School of Economics, Mosca - RUSSIA

terrà presso il Dipartimento di Matematica
dell'Università degli Studi di Bari Aldo Moro,
la seguente conferenza:

**“Algebras of linear growth, regular languages, and the dynamical
Mordell-Lang conjecture”**

il 11 Maggio 2018 alle ore 15.30 in aula VI

Abstract:

Ufnarovski remarked in 1990 that it is unknown whether any finitely presented associative algebra of linear growth is automaton, that is, whether the set of normal words in the algebra form a regular language. If the algebra is graded, then the rationality of the Hilbert series of the algebra follows from the affirmative answer to Ufnarovski's question. Assuming that the ground field has a positive characteristic, we show that the answer to Ufnarovskii's question is positive for graded algebras if and only if the basic field is an algebraic extension of its prime subfield. Our approach is based on a connection with the dynamical Mordell-Lang conjecture. This conjecture describes the intersection of an orbit of an algebraic variety endomorphism with a subvariety. We show that the positive answer to Ufnarovski's question implies some known cases of the dynamical Mordell-Lang conjecture. In particular, the positive answer for a class of algebras is equivalent to the Skolem-Mahler-Lech theorem which says that the set of the zero elements of any linear recurrent sequence over a zero characteristic field is the finite union of several arithmetic progressions. In particular, classical counter-examples to this theorem in the finite characteristic case give examples of finitely presented algebras of linear growth with irrational Hilbert series.

La S.V. è cordialmente invitata a partecipare.
Bari, 09.05.2018

Il Direttore del Dipartimento di Matematica
Prof.ssa Addolorata SALVATORE

U.O. DIDATTICA E SERVIZI AGLI STUDENTI
DIPARTIMENTO DI MATEMATICA
TEL (+39) 080 5442645 · FAX (+39) 080 5442365
elena.delzotti@uniba.it

VIA EDOARDO ORABONA, N° 4 - 70125 BARI
CAMPUS UNIVERSITARIO "E. QUAGLIARELLO"
direttore.matematica@uniba.it
<http://www.dm.uniba.it>