APRIL 1 - JULY 15

IMPAN, WARSAW

SIMONS SEMESTER ON

GEOMETRIC AND ANALYTIC GROUP THEORY

COLLOQUIUM
TUESDAY, 23.04.2019
16:15-17:30

ROOM 321, IMPAN
ŚNIADECKICH 8
00-656 WARSZAWA

Yves Cornulier (U. Lyon 1 Claude Bernard)

Classical Lie algebras over fields

Abstract: I will present a hopefully original approach to the (known) classification of classical Lie algebras over (non-algebraically closed) fields. More precisely, given a classical Lie algebra (sl_n, so_n or sp_n), what are Lie algebras over a given field that become isomorphic to it after extending scalars? The case of sl_2 (in char. not 2) is a simple trick: any such Lie algebra is the Lie algebra of its Killing form, hence is $so(q)$ for some nondegenerate 3-dimensional quadratic form q.
I will emphasize the case of sl_3 (in char. not 3), which encapsulates the main ideas. The approach uses polynomial identities algebras, but does not make use of Galois cohomology or algebraic groups.