THEMATIC PROGRAM ON
TORSORS, NONASSOCIATIVE ALGEBRAS AND COHOMOLOGICAL INVARIANTS

JANUARY – JUNE 2013

20th Anniversary

FIELDS

The theory of nonassociative algebras and the theory of torsors are well-established areas of modern mathematics. There are several open conjectures in modern algebraic geometry that are closely related to torsors. This is the first central theme of the Program. The second central theme is the connection between the "forms" point of view and Extended Affine Lie Algebras — a class of infinite dimensional Lie algebras that as rough approximations can be thought of as higher analogues of the affine Kac-Moody Lie algebras. The bridge between torsors and nonassociative algebras, the third and final theme of the Program, is provided by the various cohomological invariants.

ORGANIZERS

Vladimir Chernousov (Alberta)
Erhard Neher (Ottawa)
Alexander Merkurjev (UCLA)
Arturo Pianzola (Alberta)
Kirill Zainoulline (Ottawa)

LECTURE SERIES

May 2013
Distinguished Lecture Series
Jean-Pierre Serre (Collège de France)

May 2013
Coxeter Lecture Series
Raman Parimala (Emory University)

GRADUATE COURSES

January – March 2013
Algebraic Groups Over Arbitrary Fields
Instructors: Vladimir Chernousov and Nikita Semenov

February – March 2013
Affine and Extended Affine Lie Algebras
Instructor: Erhard Neher

March 1 – April 27, 2013
Reductive Group Schemes
Instructor: Philippe Gille

January – May 2013
Algebraic and Geometric Theory of Quadratic Forms
Instructor: Nikita Karpenko

WORKSHOPS AND ACTIVITIES

February – March 2013
Concentration Period I: Applications of Torsors to Infinite Dimensional Lie theory
Organized by V. Chernousov, E. Neher and A. Pianzola

March 18 – 29, 2013
Workshop on Geometric Methods in Lie Theory

March 18 – 22, 2013
Part One: Mini-courses
MC 1 on Galois Cohomology and Descent Theory (A. Pianzola); MC 2 on Exceptional Jordan Algebras (M. Racine); MC 3 on Kac-Moody groups (B. Remy)

March 25 – 29, 2013
Part Two: Conference on Geometric Methods in Infinite-dimensional Lie Theory

April-June, 2013
Concentration Period II: Torsors, Motives and Cohomological Invariants
Organized by V. Chernousov, A. Merkurjev and K. Zainoulline

April 29 – May 3, 2013
Course: Introduction to Quadratic Forms and Algebras with Involutions (Anne Queguiner-Mathieu)

May 6 – 10, 2013
MC 4: Introduction to Chow groups and Chow motives (Stefan Gille); MC 6: Motives and algebraic cycles on twisted flag varieties (Kirill Zainoulline)

May 13 – 17, 2013
MC 5: Local-global principles in the theory of linear algebraic groups (Julia Hartmann); MC 7: An Introduction to the Theory of Essential Dimension (Zinovy Reichstein)

May 6-17, 2013
Spring school and Workshop on Torsors, Motives and Cohomological Invariants

June 10-14, 2013
Conference on Torsors, Nonassociative Algebras and Cohomological Invariants

For more information and to register, please visit:
www.fields.utoronto.ca/programs/scientific/12-13/torsors

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