

**Third International Workshop on
Differential Algebra and Related Topics (DART-III)
November 13-16, 2008, Rutgers University at Newark**

Final Announcement

The Third International Conference on Differential Algebra and Related Topics (DART-III) is the third in a series of conferences after DART (2000) and DART-II (2007) on the subject of differential algebra and related topics. Based on the pioneering work of Ritt and foundational research of Kolchin in the last century, differential algebra has evolved into an extremely rich subject in the recent two decades. From traditional studies of differential equations using an algebraic view point, it now has interactions with highly diversified areas of mathematics, ranging from algebraic geometry, combinatorics, and mathematical logic to differential algebraic equations on differential manifolds, Diophantine geometry, and arithmetic differential equations. New and improved differential algebraic methods have been incorporated in many symbolic computation systems. Much progress has also been made in related algebra structures, such as difference algebra, difference and differential schemes, and Rota-Baxter algebra.

Topics. Differential Galois theory, differential schemes, differential algebraic groups, differential algebra and model theory, exterior differential systems, Riemann-Hilbert correspondence, Rota-Baxter algebra, renormalization, integrable systems, computational differential algebra. Analogous topics in difference algebra are included as well. Other topics such as D-module theory, control theory, and applications to non-commutative differential geometry will also be considered in as much as they relate to the above.

Conference Program

Thursday, November 13 in Bove Auditorium, Engelhard Hall

8:45–9:00 Welcoming remarks

9:00–9:50 Matthias Aschenbrenner, Degree Bounds for Grobner Bases in Algebras of Solvable Type

10:00–10:50 Evelyne Hubert, Constructive Algebra for Differential Invariants

11:30–12:20 Robert Bryant, On Cartan's Generalizations of Lie's Third Theorem

2:00–2:25 Lisi D'Alfonso, On the Index and the Order of Quasi-regular DAE Systems

2:30–2:55 Francois Ollivier, A Proof of the Dimensional Conjecture and of Jacobi's Bound

4:00–4:25 A. A. Mikhalev, Free Differential Calculus for Free Algebras of Schreier Varieties

4:30–4:55 V. Ravi Srinivasan, Extensions by Antiderivatives and Iterated Logarithms

Friday, November 14 in Ackerson Hall 123

9:00–9:50 Julia Hartmann, Applications of Patching

10:00–10:50 Anand Pillay, Logarithmic Derivatives on Nonconstant Commutative Algebraic Groups, and Transcendence

11:30–12:20 Jerry Kovacic, Differential Schemes

2:00–2:25 B. Heinrich Matzat, Galois Theory of Frobenius Modules

2:30–2:55 Arne Ledet, PGL_n as a Differential Galois Group

3:00–4:00 Poster Session* and Refreshments

4:00–4:25 Alexey Ovchinnikov, Differential Elimination and Bounding Orders in Effective Differential Nullstellensatz

4:30–4:55 David Blazquez-Sanz, Lie-Vessiot Systems, Algebraic Superposition Laws and Strongly Normal Extensions

Saturday, November 15 in Ackerson Hall 123

9:00–9:50 Sylvie Paycha, “Locality” as a Driving Principle for Renormalisation
10:00–10:50 Bin Zhang, Renormalization on Toric Varieties
11:30–12:20 Snigdhayan Mahanta, Holomorphic Bundles over Noncommutative Tori and $\text{Rep}(\mathbb{Z})$
2:00–2:25 Earl Taft, Differentiably Finite Power Series and Combinatorial Identities
2:30–2:55 Zongzhu Lin, Representations of Differential Rota-Baxter Algebras
3:00–4:00 Poster Session* and Refreshments
4:00–4:25 Robert Grossman, Some Differential Algebraic Structures Induced by Hopf Algebras of Labeled Trees
4:30–4:55 A.G. Khovanskii, Topological Galois Theory

Sunday, November 16 in Ackerson Hall 123

9:00–9:50 Anton Leykin, Computation of Bernstein-Sato polynomials
10:00–10:50 Emma Previato, Isomonodromic Garnier System and Geometry of Higher Painlevé VI Equations
11:30–12:20 Guy Casale, Non-linear Differential Galois Theory
2:00–2:25 Richard Cleyton, Differential Gerstenhaber Algebras and Weak Mirror Symmetry of Nilpotent Lie Algebras
2:30–2:55 Tom Scanlon, Differential Galois Theories from Model Theory
3:00–4:00 Poster Session* and Refreshments
4:00–4:25 Lucia Di Vizio, q -difference Equations with $|q| = 1$
4:30–4:55 Alexander Levin, Dimension Polynomials of Intermediate Fields of a Finitely Generated Difference-Differential Field Extension

*** Poster presentations**

Ruyong Feng, Liouvillian Solutions of Linear Differential-Difference Equations
Xiaoshan Gao, A Criterion for Testing Whether a Difference Ideal Is Reflexive and Prime
Hani Shaker, On Factorization of Multivariate Polynomials and de Rham Cohomology
Ekaterina Shemyakova, Differential Transformations for Second-Order Bivariate Parabolic LPDOs (Linear Partial Differential Operators)
Max Wakefield, Derivations of an Effective Divisor on the Complex Projective Line

Conference URL: <http://newark.rutgers.edu/~liguo/DARTIII/diffalg.html>

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