# Section 04: Algebraic Geometry

## Invited Lectures

### Wednesday, 19 August — MA 005

16:15 – 17:00 **Robbert Dijkgraaf (also Section 11),** University of Amsterdam, Amsterdam, The Netherlands
*The Mathematics of Fivebranes* *(I: p.62)*
Chair: Fedor Smirnov

17:15 – 18:00 **Johan de Jong,** Princeton University, Princeton, USA
*Barsotti-Tate groups and crystals* *(I: p.61)*
Chair: Gerard van der Geer

### Thursday, 20 August — MA 005

14:00 – 14:45 **Mark L. Green,** UCLA, Los Angeles, USA
*Higher Abel-Jacobi Maps* *(I: p.62)*
Chair: Frank Schreyer

15:00 – 15:45 **Maurizio Cornalba,** Università di Pavia, Pavia, Italy
*Cohomology of moduli spaces of stable curves* *(I: p.61)*
Chair: Alberto Conte

### Friday, 21 August — MA 005

14:00 – 14:45 **Mikhail M. Kapranov,** Northwestern University, Evanston, USA
*Operads and algebraic geometry* *(I: p.65)*
Chair: Enrico Arbarello

15:00 – 15:45 **Victor Vadimovich Batyrev,** Universität Tübingen, Tübingen, Germany
*Mirror symmetry and toric geometry* *(I: p.60)*
Chair: Yujiro Kawamata

### Saturday, 22 August — H 1028

16:15 – 17:00 **Paul S. Aspinwall (also Section 11),** Duke University, Durham, USA
*Geometry and String Duality* *(I: p.59)*
Chair: Pelham M.H. Wilson

## Short Communications and Poster Sessions

### Short Communications — Thursday, 20 August

**Toric Varieties** — **MA 042**
Chair: Klaus Altmann

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|---|---|---|
| 16:15 – 16:30 | **Anette A'Campo-Neuen,** Universität Konstanz, Konstanz, Germany<br>*Quasi–Projective Reduction of Toric Varieties* | *(p.49)* |
| 16:30 – 16:45 | **Jürgen Hausen,** Universität Konstanz, Konstanz, Germany<br>*Toric Quotients* | *(p.53)* |
| 16:45 – 17:00 | **Evgeni Nikolaevich Materov,** Krasnoyarsk State University, Krasnoyarsk, Russia<br>*One estimate for dimension of* $H^n(\mathbf{C}^n \backslash V, \mathbf{C})$ | *(p.56)* |

**Singularities I** — **MA 042**
Chair: Gert-Martin W. Greuel

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|---|---|---|
| 17:15 – 17:30 | **Sabir M. Gusein-Zade,** Moscow State University, Moscow, Russia<br>*On the index of a gradient vector field at an isolated complete intersection singularity* | *(p.53)* |
| 17:30 – 17:45 | **Ludwig Balke,** Universität Bonn, Bonn, Germany<br>*Open book fibrations of lens spaces and deformations of cyclic quotient singularities* | *(p.50)* |
| 17:45 – 18:00 | **Claus Hertling,** Universität Bonn, Bonn, Germany<br>*Variational Torelli result for hypersurface singularities* | *(p.53)* |

### Short Communications — Friday, 21 August

**D-Modules/Vector Bundles I** — **MA 042**
Chair: Sabir M. Gusein-Zade

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|---|---|---|
| 16:15 – 16:30 | **Aleksandr G. Aleksandrov,** Institute of Control Sciences, Moscow, Russian Federation<br>*Gauß-Manin-Zusammenhang und logarithmische Picard-Fuchs-Systeme* | *(p.49)* |
| 16:30 – 16:45 | **Vladimir Bavula,** University of Edinburgh, Edinburgh, UK<br>*The Simple Holonomic Modules over the Ring of Differential Operators on a Smooth Algebraic Surface* | *(p.50)* |
| 16:45 – 17:00 | **Ushadevi N. Bhosle,** Tata Institute of Fundamental Research, Mumbat, India<br>*Moduli spaces of torsion-free sheaves on nodal curves* | *(p.51)* |

**Deformations and Degenerations** — **MA 042**
Chair: Aleksandr G. Aleksandrov

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|---|---|---|
| 17:15 – 17:30 | **Kimio Miyajima,** Dept. of Math. and Comp. Science, Kagoshima City, Japan<br>*CR construction of the semi-universal family of normal isolated singularities* | *(p.57)* |
| 17:30 – 17:45 | **Eduardo S. Esteves,** IMPA, Rio de Janeiro, Brazil<br>*Degenerations of Weierstrass points* | *(p.52)* |
| 17:45 – 18:00 | **Diego Paccagnan,** Universitá di Padova, Padova, Italy<br>*Maximum number of cusps on algebraic plane curves and nodes on surfaces* | *(p.59)* |

### Short Communications — Saturday, 22 August

**Affine Algebraic Geometry** — **MA 042**
Chair: Marko Roczen

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|---|---|---|
| 14:00 – 14:15 | **Tatsuji Kambayashi,** Tokyo Denki University, Saitama-Ken, Japan<br>*A Nullstellensatz for Pro-Affine Algebras* | *(p.55)* |
| 14:15 – 14:30 | **Vladimir Shpilrain,** The University of Hong Kong, Hong Kong, P.R. of China<br>*Embeddings of curves in the plane* | *(p.60)* |
| 14:30 – 14:45 | **Jie-Tai Yu,** The University of Hong Kong, Hong Kong, P.R. of China<br>*Polynomial Retracts and the Jacobian Conjecture* | *(p.63)* |

| **Riemann Surfaces/Linear Systems** Chair: Anette A'Campo-Neuen | | **MA 042** |
|---|---|---|
| 15:00 – 15:15 | **Sergei Natanzon,** Independent University of Moscow, Moscow, Russia<br>*Topological structure of spaces of holomorphic morphisms* | *(p.58)* |
| 15:15 – 15:30 | **Masahiro Ohno,** Waseda University, Dept. of Math., Tokyo, Japan<br>*On nef values of determinants of ample vector bundles* | *(p.59)* |
| 15:30 – 15:45 | **Siye Wu,** The University of Adelaide, Adelaide, SA, Australia<br>*On the instanton complex of holomorphic Morse theory* | *(p.62)* |

| **Curves and Surfaces/Higher-Dimensional Varieties I** Chair: Rolf-Peter Holzapfel | | **MA 042** |
|---|---|---|
| 17:15 – 17:30 | **Viktor S. Kulikov,** Steklov Mathematical Institute, Moscow, Russia<br>*On Chisini's Conjecture* | *(p.55)* |
| 17:30 – 17:45 | **Kazuhisa Maehara,** Tokyo Institute of Polytechnics, Tokyo, Japan<br>*Deformation of function fields* | *(p.56)* |
| 17:45 – 18:00 | **Dan Avritzer,** Universidade Federal de Minas Gerais, Belo Horizonte, Brazil<br>*The Hilbert scheme component of the intersection of two quadrics* | *(p.50)* |

## Short Communications — Monday, 24 August

| **Moduli Spaces and Mathematical Physics** Chair: Ragni Piene | | **MA 042** |
|---|---|---|
| 14:00 – 14:15 | **Sheldon H. Katz,** Oklahoma State University, Stillwater, OK, USA<br>*Geometric Engineering of Quantum Field Theories* | *(p.55)* |
| 14:15 – 14:30 | **Alexandre Kabanov,** Michigan State University, East Lansing, MI, USA<br>*Intersection theory on the moduli spaces of stable curves* | *(p.54)* |
| 14:30 – 14:45 | **Tyler J. Jarvis,** Brigham Young University, Provo-UT, USA<br>*Geometry of the Moduli of Higher Spin Curves* | *(p.54)* |

| **Vector Bundles II** Chair: Herbert Kurke | | **MA 042** |
|---|---|---|
| 15:00 – 15:15 | **Hagen Meltzer,** Technische Universität Chemnitz, Chemnitz, Germany<br>*Exceptional vector bundles* | *(p.57)* |
| 15:15 – 15:30 | **Vasile P. Brinzănescu,** Institute of Mathematics, Bucharest, Romania<br>*Moduli spaces of stable 2-vector bundles over ruled surfaces* | *(p.51)* |
| 15:30 – 15:45 | **Elham Izadi,** University of Georgia, Athens, Georgia, USA<br>*An embedding of a moduli space of vector bundles* | *(p.54)* |

| **Singularities II** Chair: Herbert Kurke | | **MA 309** |
|---|---|---|
| 16:15 – 16:30 | **Michał Kwieciński,** Jagiellonian University, Kraków, Poland<br>*An algebraic map with nonconstructible topology* | |

## Short Communications — Tuesday, 25 August

| **Surfaces/Higher-Dimensional Varieties II** Chair: Vasile P. Brinzănescu | | **MA 042** |
|---|---|---|
| 16:15 – 16:30 | **Alberto Conte,** Università di Torino, Torino, Italy<br>*On the unirationality of quartic hypersurfaces* | *(p.52)* |
| 16:30 – 16:45 | **Fabrizio M.E. Catanese,** G.A. Universität Göttingen, Göttingen, Germany<br>*Bidouble covers and surface geography* | *(p.51)* |
| 16:45 – 17:00 | **Remo Gattazzo,** Università di Padova, Padova, Italy<br>*Almost factorial quartic surfaces in $\mathbb{P}^3_{\mathbb{C}}$ with a tacnodal point* | *(p.52)* |

| **Surfaces/Higher-Dimensional Varieties III** Chair: Fabrizio M.E. Catanese | | **MA 042** |
|---|---|---|
| 17:15 – 17:30 | **Marina R. Marchisio,** Università di Torino, Torino, Italy<br>*Some new examples of smooth unirational quartic threefolds* | *(p.56)* |
| 17:30 – 17:45 | **Uwe Nagel,** University-GH Paderborn, Paderborn, Germany<br>*Characterization of projective subschemes by locally free resolutions* | *(p.57)* |
| 17:45 – 18:00 | **Tomasz Szemberg,** Jagiellonian University, Cracow, Poland<br>*Higher order embeddings and Seshadri constants of abelian varieties* | *(p.61)* |

## Short Communications — Wednesday, 26 August

| **Surfaces/Higher-Dimensional Varieties IV** Chair: Viktor S. Kulikov | | **MA 042** |
|---|---|---|
| 14:00 – 14:15 | **Yuri G. Prokhorov,** Moscow State University, Moscow, Russia<br>*Mori contractions of relative dimension* 1 | *(p.59)* |
| 14:15 – 14:30 | **Maria Cristina Ronconi,** Università degli Studi di Padova, Padova, Italy<br>*Algebraic threefolds with* $\mathbf{q_1 = q_2 = p_g = 0, P_{2i} = 1}$*, and* $\mathbf{P_{2i+1} = 0}$ | *(p.60)* |
| 14:30 – 14:45 | **Ezio Stagnaro,** Università di Padova, Padova, Italy<br>*Pluricanonical maps of two general type threefolds with* $\mathbf{p_g = 0}$ | *(p.60)* |

| **Algebraic Cycles** Chair: Yuri G. Prokhorov | | **MA 042** |
|---|---|---|
| 16:15 – 16:30 | **Manfred F.G. Streit,** Johann Wolfgang Goethe Universität, Frankfurt, Germany<br>*Field of Definition and Galois Orbits of some Non–Congruence Subgroups* | *(p.61)* |
| 16:30 – 16:45 | **Serguei G. Tankeev,** Vladimir State University, Vladimir, Russia<br>*Algebraic cycles of small codimension on simple* 2*p- or* 4*p-dimensional abelian variety* | *(p.62)* |
| 16:45 – 17:00 | **Johannes Huisman,** Institut Mathematique de Rennes, Rennes, France<br>*Uniformization of real algebraic curves and complex analytic coordinates on Teichmüller spaces* | *(p.54)* |

## Poster Session — Wednesday, 19 August

**14:00 – 15:45** **MA 144**

**Jacqueline Arancibia,** Departmento de Matemática, UFPB, Joao Pessoa, Brasil
*Canonical Curves in* $P^3$ *(p.49)*

**Isidro P. Nieto,** Universidad Michoacana de SNH, Morelia, Mexico
$H_{2,2}$*-Kummer surfaces associated to polarized abelian surfaces of type (1,3)* *(p.58)*

**Niranjan Ramachandran,** University of Michigan, Ann Arbor, MI, USA
*A conjecture of Deligne* *(p.59)*

**Rudi Weikard,** University of Alabama at Birmingham, Birmingham, AL, USA
*Algebro-geometric Differential Operators* *(p.62)*

**Katsuaki Yoshida,** Nihon University, Funabashi, Japan
*Klein's surface of genus three and associated theta constants* *(p.62)*

**Rupert W.T. Yu,** Université de Poitiers, Poitiers, France
*Lattice polytopes for certain Demazure modules of* $sl_{n+1}$ *(p.63)*