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**The 2nd MSJ-SI**  
The Mathematical Society of Japan, Seasonal Institute

# Arrangements of Hyperplanes

**Dates :** August 1 – 13, 2009  
1st week (August 1 – 5)  
2nd week (August 8 – 13)

**Venue :** Conference Hall, Hokkaido University  
Sapporo, Japan

**Organizing committee :** Takuro Abe  
Hiroaki Terao (chair)  
Masahiko Yoshinaga  
Sergey Yuzvinsky

## 1st week (August 1 – 5)

### August 1 (Sat)

- 9:45–10:45 Sergey Yuzvinsky (University of Oregon, USA)  
Arrangements (Introduction)
- 11:15–12:15 Sergey Yuzvinsky (University of Oregon, USA)  
Arrangements (Introduction)
- 14:15–15:15 Hal Schenck (University of Illinois, USA)  
Arrangements and Computations
- 15:45–16:45 Alexander Varchenko (The University of North Carolina  
at Chapel Hill, USA)  
Arrangements, Hypergeometric Integrals and Physics
- 17:00–18:00 Toshitake Kohno (The University of Tokyo, Japan)  
Arrangements and Topology

### August 2 (Sun)

- 9:45–10:45 Toshitake Kohno (The University of Tokyo, Japan)  
Arrangements and Topology
- 11:15–12:15 Richard Stanley (Massachusetts Institute of Technology, USA)  
Arrangements and Combinatorics
- 14:15–15:15 Hal Schenck (University of Illinois, USA)  
Arrangements and Computations
- 15:45–16:45 Alexander Varchenko (The University of North Carolina  
at Chapel Hill, USA)  
Arrangements, Hypergeometric Integrals and Physics
- 17:00–18:00 Toshitake Kohno (The University of Tokyo, Japan)  
Arrangements and Topology

### **August 3 (Mon)**

- 9:45–10:45 Masahiko Yoshinaga (Kyoto University, Japan)  
Arrangements and Algebraic Geometry
- 11:15–12:15 Richard Stanley (Massachusetts Institute of Technology, USA)  
Arrangements and Combinatorics
- 14:15–15:15 Hal Schenck (University of Illinois, USA)  
Arrangements and Computations
- 15:45–16:45 Alexander Varchenko (The University of North Carolina  
at Chapel Hill, USA)  
Arrangements, Hypergeometric Integrals and Physics
- 17:00–18:00 Masahiko Yoshinaga (Kyoto University, Japan)  
Arrangements and Algebraic Geometry

### **August 4 (Tue)**

- 9:45–10:45 Masahiko Yoshinaga (Kyoto University, Japan)  
Arrangements and Algebraic Geometry
- 11:15–12:15 Richard Stanley (Massachusetts Institute of Technology, USA)  
Arrangements and Combinatorics
- 14:15–15:15 Kyoji Saito (Institute for the Physics and Mathematics  
of the Universe, Japan)  
Arrangements and Singularities
- 15:45–16:45 Akimichi Takemura (The University of Tokyo, Japan)  
Arrangements and Statistics
- 18:00–20:00 Reception at the Aspen Hotel

**August 5 (Wed)**

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| 9:45–10:45  | Akimichi Takemura (The University of Tokyo, Japan)<br>Arrangements and Statistics                                   |
| 11:15–12:15 | Akimichi Takemura (The University of Tokyo, Japan)<br>Arrangements and Statistics                                   |
| 14:15–15:15 | Kyoji Saito (Institute for the Physics and Mathematics<br>of the Universe, Japan)<br>Arrangements and Singularities |
| 15:45–16:45 | Kyoji Saito (Institute for the Physics and Mathematics<br>of the Universe, Japan)<br>Arrangements and Singularities |

**August 6 (Thu)**

Excursion

**August 7 (Fri)**

Free day

## 2nd week (August 8 – 13)

### August 8 (Sat)

- 9:30– Takashi Tsuboi (President of the Mathematical Society of Japan)  
Welcome speech
- 9:45–10:45 Kazuhiko Aomoto (Nagoya University, Japan)  
Hypersphere arrangement and imaginary cycles for hypergeometric integrals
- 11:15–12:15 Christos Athanasiadis (University of Athens, Greece)  
Hyperplane arrangements, random walks and eigenvalues
- 14:15–15:15 Anatoly Libgober (University of Illinois at Chicago, USA)  
Characteristic varieties of arrangements with isolated non normal crossings
- 15:45–16:45 Eva Maria Feichtner (University of Bremen, Germany)  
On tropical arrangement compactifications
- 17:00–18:00 Richard Rimanyi (The University of North Carolina at Chapel Hill, USA)  
Equivariant classes of matroid realization spaces

### August 9 (Sun)

- 9:45–10:45 Uli Walther (Purdue University, USA)  
Bockstein maps in local cohomology  
Joint with Anurag Singh (Utah)
- 11:15–12:15 Claudio Procesi (Università di Roma, Italy)  
From splines to the index theorem
- 14:15–15:15 Alexandru Suciu (Northeastern University, USA)  
On the geometry and topology of cohomology jump loci
- 15:45–16:45 Igor Dolgachev (University of Michigan, USA)  
Invariant theory of arrangements of hyperplanes
- 17:00–17:30 **[short communication I]**  
Simona Settepanella (Scuola Superiore Sant’Anna, Italy)  
Arrangements and political economics
- 17:30–18:00 **[short communication II]**  
Luca Moci (Università di Roma, Italy)  
An introduction to toric arrangements
- 18:00–18:30 **[short communication III]**  
Yoshio Sano (RIMS, Japan)  
Graphical Arrangements and Braid Arrangements  
– Graph orientations and linear extensions –

## August 10 (Mon)

- 9:45–10:45 Anders Björner (Mittag-Leffler Institute, Sweden)  
(presented by Axel Hultman (Royal Institute of Technology, Sweden))  
Random walks on complex hyperplane arrangements and self-organizing libraries
- 11:15–12:15 Katsuhisa Mimachi (Tokyo Institute of Technology, Japan)  
Arrangements of hyperplanes and solutions of the Fuchsian differential equations free from accessory parameters
- 14:15–15:15 Dai Tamaki (Shinshu University, Japan)  
Iterated loop spaces and oriented matroids
- 15:45–16:45 Mario Salvetti (Università di Pisa, Italy)  
Some applications of discrete Morse theory to arrangements
- 17:00–18:00 Antoine Deza (McMaster University, Canada)  
Hyperplane arrangements with large average diameter

## August 11 (Tue)

- 9:45–10:15 **[short communication VI]**  
Meital Eliyahu (Bar Ilan University, Israel )  
A characterization of line arrangement whose fundamental group is a direct sum of free groups
- 10:15–10:45 **[short communication V]**  
David Garber (Holon Institute of Technology, Israel)  
A conjugation-free geometric presentation of fundamental groups of arrangements
- 11:15–12:15 Yoshishige Haraoka (Kumamoto University, Japan)  
Arrangements of hyperplanes arising from sections of rigid local systems
- 14:15–15:15 Hironobu Kimura (Kumamoto University, Japan)  
On a problem of arrangements related to the hypergeometric integrals of confluent type
- 15:45–16:45 Eduard Looijenga (Universiteit Utrecht, Netherlands)  
Representations out of polydifferentials and the KZ-system
- 17:00–17:30 **[short communication VI]**  
Amanda Hager (University of Iowa, USA)  
Freeness of arrangements and arrangement bundles
- 17:30–18:00 **[short communication VII]**  
Miguel Angel Marco-Buzunariz  
(Instituto de Ciencias Matematicas Consejo Superior de Investigaciones Cientificas, Spain)  
On Rybnikov's example
- 18:00–18:30 **[short communication VIII]**  
Suho Oh (MIT, USA)  
Bruhat order and hyperplane arrangements
- 18:30–19:00 **[short communication IX]**  
Max Wakefield (US Naval Academy, USA)  
Formality of subspace arrangements

### August 12 (Wed)

- 9:45–10:45 Michael Falk (Northern Arizona University, USA)  
Vanishing products in Orlik–Solomon algebras
- 11:15–12:15 David Mond (University of Warwick, UK)  
Some new free divisors associated with versal deformations and stable maps
- 14:15–15:15 Ichiro Shimada (Hiroshima University, Japan)  
On lattice-theoretic invariants of curves on a surface
- 15:45–16:45 Jorge Vitória Pereira (IMPA, Brazil)  
Webs and arrangements
- 17:00–18:00 Graham Denham (University of Western Ontario, Canada)  
Critical sets of master functions: resonance and log derivations

### August 13 (Thu)

- 9:45–10:45 Daniel Cohen (Louisiana State University, USA)  
Collision-free motion planning on surfaces
- 11:15–12:15 Tomohide Terasoma (The University of Tokyo, Japan)  
Lines in Fermat hypersurfaces and  $M_{0,n}$
- 14:15–15:15 Ivan Cherednik (The University of North Carolina  
at Chapel Hill, USA)  
Affine root systems and harmonic analysis