

# Program

The first week (July 28th – August 1st)  
Kyoto University Clock Tower Centennial Hall

## July 28th (Mon.)

- 9:45–10:15 Registration
- 10:15–10:30 **President of the Mathematical Society of Japan**  
Opening remark
- 10:30–11:20 **Cédric Villani**, École Normale Supérieure de Lyon, Lecture 1  
Optimal transport in geometry
- 11:20–11:40 Tea
- 11:40–12:30 **Terry J. Lyons**, University of Oxford, Lecture 1  
Rough paths — A story in non-commutative analysis
- 12:30–14:00 Lunch
- 14:00–14:50 **Martin T. Barlow**, University of British Columbia  
Uniqueness of Brownian motion on the Sierpinski carpet
- 15:00–15:30 **Max von Renesse**, Technische Universität Berlin  
Entropic measure and Wasserstein diffusion
- 15:40–16:10 **Tsuyoshi Kato**, Kyoto University  
A dynamical pattern formation, tropical geometry and informative entropy
- 16:10–16:40 Tea
- 16:40–17:30 **Roland Friedrich**, Max-Planck-Institute für Mathematik  
The global geometry of stochastic Loewner evolutions

## July 29th (Tue.)

- 10:00–10:50 **Cédric Villani**, École Normale Supérieure de Lyon, Lecture 2  
Optimal transport in geometry
- 10:50–11:10 Tea
- 11:10–12:00 **Shigeki Aida**, Osaka University, Lecture 1  
Rough path analysis: An introduction
- 12:00–14:00 Lunch
- 14:00–14:50 **Bálint Virág**, University of Toronto  
Random matrices, probability, and geometry
- 15:00–15:30 **Tatsuya Tate**, Nagoya University  
Bernstein measures on convex polytopes
- 15:40–16:10 **Chang-Wan Kim**, Korea Institute for Advanced Study  
Ricci and flag curvatures in Finsler geometry
- 16:10–16:40 Tea
- 16:40–17:30 **Shin-ichi Ohta**, Kyoto University  
Optimal transport and Ricci curvature in Finsler geometry

## July 30th (Wed.)

- 10:00–10:50 **Shun-ichi Amari**, Riken  
Information geometry, its applications and related mathematical problems
- 10:50–11:10 Tea
- 11:10–12:00 **Shigeki Aida**, Osaka University, Lecture 2  
Rough path analysis: An introduction
- 12:00–14:00 Lunch
- 14:00–14:50 **Sumio Watanabe**, Tokyo Institute of Technology  
What we can estimate about a singularity from random samples
- 15:00–15:30 **Hiroshi Matsuzoe**, Nagoya Institute of Technology  
Statistical manifolds and affine differential geometry
- 15:40–16:10 **Kazuhiro Kuwae**, Kumamoto University  
On discrete harmonic maps into CAT(k)-spaces via Markov chains
- 16:10–16:40 Tea
- [Poster] **Hyun Yoo**, Hankyong National University  
Projections in the reproducing kernel Hilbert spaces and the conditional probabilities of determinantal point processes in discrete spaces
- [Poster] **Wen-Haw Chen**, Tunghai University  
On topological obstructions of compact Riemannian and combinatorial positively Ricci curved manifolds
- 16:40–17:30 **Shinto Eguchi**, The Institute of Statistical Mathematics  
Information divergence geometry and its application to machine learning
- 18:30–20:30 Buffet-style party (Kyodai-Kaikan)

## July 31st (Thu.)

- 10:00–10:50 **Cédric Villani**, École Normale Supérieure de Lyon, Lecture 3  
Optimal transport in geometry
- 10:50–11:10 Tea
- 11:10–12:00 **Shigeki Aida**, Osaka University, Lecture 3  
Rough path analysis: An introduction
- 12:00–14:00 Lunch
- 14:00–14:50 **Takashi Shioya**, Tohoku University  
Geometric analysis on Alexandrov spaces
- 15:00–15:30 **Yuzuru Inahama**, Tokyo Institute of Technology  
A stochastic Taylor-like expansion in the rough path theory
- 15:40–16:10 **Kazumasa Kuwada**, Ochanomizu University  
Characterization of maximal Markovian couplings for diffusion processes
- 16:10–16:40 Tea
- 16:40–17:30 **Keisuke Hara**, Ritsumeikan University  
Rough path condition for smooth paths

## August 1st (Fri.)

10:00–10:50	<b>Cédric Villani</b> , École Normale Supérieure de Lyon, Lecture 4 Optimal transport in geometry
10:50–11:10	Tea
11:10–12:00	<b>Vladimir Pestov</b> , University of Ottawa Urysohn’s universal, or random, metric space, its group of isometries, and other related structures
12:00–14:00	Lunch
14:00–14:50	<b>Robert J. McCann</b> , University of Toronto Curvature, continuity and uniqueness of optimal transportation maps
15:00–16:10	Contributed Talks  <b>Kouji Yano</b> , Kobe University Excursions away from a regular point for one-dimensional symmetric Lévy processes without Gaussian part  <b>Hiroshi Kawabi</b> , Okayama University Riesz transforms on a path space with Gibbs measures  <b>AbdulRahman Al-Hussein</b> , Qassim University Time-dependent backward stochastic evolution equations
16:10–16:40	Tea
16:40–17:30	<b>Yukio Otsu</b> , Kyushu University Statistical mechanics of 1-particle ideal gas and deformation of Alexandrov spaces

## August 2nd (Sat.)

<b>Excursion</b>	<b>13:30–17:30</b>
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**The second week (August 4th – August 8th)**  
**Shiran Kaikan**

**August 4th (Mon.)**

10:00–10:50	<b>Laurent Saloff-Coste</b> , Cornell University, Lecture 1 Heat kernel estimates
10:50–11:10	Tea
11:10–12:00	<b>Yann Ollivier</b> , École Normale Supérieure de Lyon, Lecture 1 Survey on random groups
12:00–14:00	Lunch
14:00–14:50	<b>John Lott</b> , University of Michigan Optimal transport and Perelman’s reduced volume
15:00–15:30	<b>Yoshikata Kida</b> , Tohoku University Orbit equivalence rigidity for some groups acting on trees
15:40–16:10	<b>Atsushi Atsuji</b> , Keio University Estimates on the number of omitted values of meromorphic functions
16:10–16:40	Tea
16:40–17:30	<b>Vadim Kaimanovich</b> , Jacobs University Bremen Random graphs and equivalence relations

**August 5th (Tue.)**

10:00–10:50	<b>Laurent Saloff-Coste</b> , Cornell University, Lecture 2 Heat kernel estimates
10:50–11:10	Tea
11:10–12:00	<b>Yann Ollivier</b> , École Normale Supérieure de Lyon, Lecture 2 Discrete positive curvature, Markov chains and concentration of measure
12:00–14:00	Lunch
14:00–14:50	<b>Terry J. Lyons</b> , University of Oxford, Lecture 2 Rough paths — A story in non-commutative analysis
15:00–16:10	Contributed Talks <b>Masayoshi Watanabe</b> , Tohoku University Concentration of measure via approximated Brunn-Minkowski inequalities <b>Kei Funano</b> , Tohoku University Concentration of 1-Lipschitz maps and group action <b>Asuka Takatsu</b> , Tohoku University On Wasserstein geometry of the space of Gaussian measures
16:10–16:40	Tea
16:40–17:30	<b>Hiroyasu Izeki</b> , Tohoku University A fixed-point property of discrete groups and an energy of equivariant maps

## August 6th (Wed.)

- 10:00–10:50 **Laurent Saloff-Coste**, Cornell University, Lecture 3  
Heat kernel estimates
- 10:50–11:10 Tea
- 11:10–12:00 **Yann Ollivier**, École Normale Supérieure de Lyon, Lecture 3  
Discrete positive curvature, Markov chains and concentration of measure
- 12:00–14:00 Lunch
- 14:00–14:50 **Anton Thalmaier**, Université du Luxembourg  
Li-Yau type inequalities and a priori estimates for heat equations  
by stochastic analysis
- 15:00–15:30 **Takefumi Kondo**, Kyoto University  
Fixed-point property of random groups
- 15:40–16:10 **Jun Kigami**, Kyoto University  
Measurable Riemannian geometry on the Sierpinski gasket
- 16:10–16:30 Tea
- 16:30–17:10 Contributed Talks
- Naotaka Kajino**, Kyoto University  
Weyl type spectral asymptotics for the Laplacian on Sierpinski carpets
- Ryoki Fukushima**, Kyoto University  
Brownian survival among perturbed lattice traps
- 19:00–21:00 Banquet (Ganko Takasegawa Nijoen)

## August 7th (Thu.)

- 10:00–10:50 **Laurent Saloff-Coste**, Cornell University, Lecture 4  
Heat kernel estimates
- 10:50–11:10 Tea
- 11:10–12:00 **Yann Ollivier**, École Normale Supérieure de Lyon, Lecture 4  
Discrete positive curvature, Markov chains and concentration of measure
- 12:00–14:00 Lunch
- 14:00–14:50 **Dominique Bakry**, Université Paul Sabatier  
Gradient bounds for some hypo-elliptic heat equations
- 15:00–16:10 Contributed Talks
- Juillet Nicolas**, University of Bonn  
Synthetic Ricci curvature bounds in the Heisenberg group
- Takumi Yokota**, University of Tsukuba  
Perelman's reduced volume and gap theorem for the Ricci flow
- Shinichiroh Matsuo**, University of Tokyo  
The Runge theorem for instantons
- 16:10–16:40 Tea
- 16:40–17:30 **Atsushi Kasue**, Kanazawa University  
Functions of finite Dirichlet sum and compactifications of infinite graphs

## August 8th (Fri.)

10:00–10:50	<b>Ichiro Shigekawa</b> , Kyoto University Non symmetric diffusions on a Riemannian manifold
10:50–11:10	Tea
11:10–12:00	<b>Terry J. Lyons</b> , University of Oxford, Lecture 3 Rough paths — A story in non-commutative analysis
12:00–14:00	Lunch
14:00–14:50	<b>Andrzej Zuk</b> , Université Paris 7 Automata groups
15:00–15:50	<b>Kenneth David Elworthy</b> , University of Warwick Stochastic flows and geometric analysis on path spaces