| | 07/11/2017 | | |
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| 08:30:00 - 09:00:00 | Opening Session | | |
| 09:00:00 - 10:00:00 | Keynote Speaker: **Jean-Michel Bismut**<br>**The hypoelliptic Laplacian** | | |
| 10:00:00 - 10:30:00 | Coffee Break | | |
| 10:30:00 - 12:30:00 | **Plenary Session "Probability on Riemannian Manifolds"**<br>**(M. Arnaudon/A.-B. Cruzeiro)**<br>- Yann Ollivier and Gaétan Marceau Caron. Natural Langevin Dynamics for Neural Networks<br>- Birgit H. Roensch and Wolfgang Stummer. 3D insights to some divergences for robust statistics and machine learning<br>- Jean-Claude Zambrini and Marc Arnaudon. A stochastic look at geodesics on the sphere<br>- Matthias Glock and Thomas Hotz. Constructing Universal, Non-Asymptotic Confidence Sets for Intrinsic Means on the Circle<br>- Marco Frasca. Noncommutative geometry and stochastic processes<br>- Florio Maria Ciaglia, Fabio Di Cosmo and Giuseppe Marmo. Hamilton-Jacobi theory and Information Geometry | | |
| 12:30:00 - 13:30:00 | Lunch Break | | |
| 13:30:00 - 15:30:00 | **Session "Computational Information Geometry"**<br>**(F. Nielsen/O. Schwander)**<br>- Salem Said and Yannick Berthoumieu. Warped metrics for location-scale models<br>- Frank Nielsen and Richard Nock. Bregman divergences from comparative convexity<br>- Philippe Regnault, Valérie Girardin and Loïck Lhote. Weighted Closed Form Expressions Based on Escort Distributions for Rényi Entropy Rates of Markov Chains.<br>- Remy Boyer and Frank Nielsen. On the Error Exponent of a Random Tensor with Orthonormal Factor Matrices<br>- Tomonari Sei. Coordinate-wise transformation and Stein-type densities | **Session "Geometrical Structures of Thermodynamics" (F. Gay-Balmaz/F. Barbaresco)**<br>- François Gay-Balmaz and Hiroaki Yoshimura. A variational formulation for fluid dynamics with irreversible processes<br>- Hiroaki Yoshimura and François Gay-Balmaz. Dirac structures in nonequilibrium thermodynamics<br>- Bernhard Maschke and Arjan van der Schaft. About the definition of port variables for contact Hamiltonian systems<br>- Vitaly Mikheyev. Method of orbits of co-associated representation in thermodynamics of the lie noncompact groups<br>- Frederic Barbaresco. Poly-Symplectic Model of Higher Order Souriau Lie Groups Thermodynamics for Small Data Analytics<br>- Francesco Becattini. Thermodynamic equilibrium in relativity: Killing vectors and Lie derivatives | **Session "Geometry of Tensor-Valued Data"**<br>**(J. Angulo/Y. Berthoumieu/ G. Verdoolaege/ A.M. Djafari)**<br>- Aleksei Shestov and Mikhail Kumskov. A Riemannian Approach to Blob Detection in Manifold-Valued Images<br>- Ioana Ilea, Lionel Bombrun, Salem Said and Yannick Berthoumieu. Co-occurrence matrix of covariance matrices: a novel coding model for the classification of texture images<br>- Reiner Lenz. Positive Signal Spaces and the Mehler-Fock Transform<br>- Simon Apers, Alain Sarlette and Francesco Ticozzi. Bounding the convergence time of local probabilistic evolution<br>- Estelle Massart and Sylvain Chevallier. Inductive means and sequences applied to online filtering and classification of EEG |
| 15:30:00 - 16:00:00 | Coffee Break | | |
| 16:00:00 - 18:00:00 | **Session "Information Structure in Neuroscience"**<br>**(P. Baudot/D. Bennequin/S. Roy)**<br>- Trang-Anh Nghiem, Olivier Marre, Alain Destxhe and Ulisse Ferrari. Pairwise Ising model analysis of human cortical neurons recordings<br>- Jeong Joon Park, Ronnel Boettcher, Andrew Zhao, Alex Mun, Kevin Yuh, Vibhor Kumar and Matilde Marcolli. Prevalence and recoverability of syntactic parameters in sparse distributed memories<br>- Majd Hawasly, Florian T. Pokorny and Subramanian Ramamoorthy. Multi-Scale Activity Estimation with Spatial Abstractions<br>- Guido Montufar and Johannes Rauh. Geometry of Policy Improvement<br>- Chenxi Li, Zelin Shi, Yunpeng Liu and Tianci Liu. Joint geometric and photometric visual tracking based on Lie group | **Session "Geometric Mechanics & Robotics"**<br>**(G. de Saxcé/J. Bensoam/ J. Lerbet)**<br>- Jean Lerbet, Noel Challamel, François Nicot and Félix Darve. Geometric Degree of Non Conservativeness<br>- Abdelbacet Oueslati, An Danh Nguyen and Géry de Saxcé. A symplectic minimum variational principle for dissipative dynamical systems<br>- Eric Bergshoeff, Athanasios Chatzistavrakidis, Luca Romano and Jan Rosseel. Torsional Newton-Cartan Geometry<br>- Thomas Hélie and Fabrice Silva. Self-oscillations of a vocal apparatus: a port-Hamiltonian formulation<br>- Frédéric Hélein, Joël Bensoam and Pierre Carré. Differential Geometry applied to Acoustics. Non Linear Propagation in Reissner Beams : an integrable system?<br>- Maurice de Gosson. Quantum Harmonic Analysis and the Positivity of Trace Class Operators; Applications to Quantum Mechanics | **Session "Optimization on Manifold"**<br>**(P.A. Absil/R. Sepulchre)**<br>- Benjamin Eltzner and Stephan Huckemann. Applying Backward Nested Subspace Inference<br>- Pierre-Yves Gousenbourger, Laurent Jacques and P.-A. Absil. Fast method to fit a C1 piecewise-Bézier function to manifold-valued data points: how suboptimal is the curve obtained on the sphere S2?<br>- Ronny Bergmann and Daniel Tenbrinck. Nonlocal Inpainting of Manifold-valued Data on Finite Weighted Graphs<br>- Cyrus Mostajeran and Rodolphe Sepulchre. Affine-invariant orders on the set of positive-definite matrices<br>- Geert Verdoolaege. Geodesic Least Squares Regression on the Gaussian Manifold: Baryonic Tully-Fisher Scaling in Disk Galaxies |
| 18:00:00 - 19:00:00 | Keynote Speaker: **Daniel Bennequin**<br>**Geometry and Vestibular Information** | | |
| 19:00:00 - 20:00:00 | Cocktail | | |

| | 08/11/2017 | | |
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| 08:30:00 - 09:00:00 | Registration Desk | | |
| 09:00:00 - 10:00:00 | Keynote Speaker: **Alain Trouvé**<br>**Hamiltonian modeling for shape evolution and Statistical modeling of shapes variability** | | |
| 10:00:00 - 10:30:00 | Coffee Break | | |
| 10:30:00 - 12:10:00 | **Plenary Session "Statistics on non-linear data"**<br>**(X. Pennec/S. Sommer)**<br>- Line Kühnel and Stefan Sommer. Stochastic Development Regression using Method of Moments<br>- Benjamin Eltzner and Stephan Huckemann. Bootstrapping Descriptors for Non-Euclidean Data<br>- Xavier Pennec. Sample-limited Lp Barycentric Subspace Analysis on Constant Curvature Spaces<br>- Maxime Louis, Alexandre Bône, Benjamin Charlier and Stanley Durrleman. Parallel transport in shape analysis : a scalable numerical scheme for Riemannian manifolds<br>- Georgios Arvanitidis, Lars Kai Hansen and Søren Hauberg. Maximum likelihood estimation of Riemannian metrics from Euclidean data | | |
| 12:10:00 - 13:30:00 | Lunch Break | | |
| 13:30:00 - 15:30:00 | **Session "Geometric Robotics & Tracking"**<br>**(S. Bonnabel/A. Barrau)**<br>- Marion Pilte, Silvere Bonnabel and Frederic Barbaresco. Drone tracking with an IEKF and an innovative UKF<br>- Silvere Bonnabel and Jean-Jacques Slotine. Particle observers for contracting dynamical systems<br>- James Forbes and David Evan Zlotnik. Sigma Point Kalman Filtering on Matrix Lie Groups<br>- Ivan Polekhin. A topological view on forced oscillations and control of an inverted pendulum<br>- Pascal Morin, Alexandre Eudes and Glauco Scandaroli. Uniform observability of linear time-varying systems and application to robotics problems<br>- Ioannis Sarras and Philippe Martin. Global exponential attitude and gyro bias estimation from vector measurements | **Session "Probability Density Estimation"**<br>**(S. Said/E. Chevallier)**<br>- Paolo Zanini, Salem Said, Yannick Berthoumieu, Marco Congedo and Christian Jutten. Riemannian Online Algorithms for Estimating Mixture Model Parameters<br>- Florent Chatelain, Nicolas Le Bihan and Jonathan Manton. Density estimation for Compound Cox processes on hyperspheres<br>- Hatem Hajri, Salem Said and Yannick Berthoumieu. Maximum likelihood estimators on manifolds<br>- Stephane Puechmorel and Florence Nicol. Von Mises-like probability density functions on surfaces<br>- Salem Said, Nicolas Le Bihan and Jonathan Manton. Riemannian Gaussian distributions on the space of positive-definite quaternion matrices<br>- Emmanuel Chevallier. A family of anisotropic distributions on the hyperbolic space | **Session "Applications of Distance Geometry"**<br>**(A. Mucherino/D. Gonçalves)**<br>- Antonio Mucherino and Douglas Gonçalves. An Approach to Dynamical Distance Geometry<br>- Claudia D'Ambrosio and Leo Liberti. Distance geometry in linearizable norms<br>- Philippe Jacquet and Dalia-Georgiana Herculea. Self-similar Geometry for Ad-Hoc Wireless Networks: Hyperfractals<br>- Radmila Pribic. Information Distances in Stochastic Resolution Analysis<br>- Frank Nielsen, Ke Sun and Stéphane Marchand-Maillet. k-Means Clustering with Hölder divergences<br>- Imsoon Jeong, Gyu Jong Kim and Young Jin Suh. Real hypersurfaces in the complex quadric with certain condition of normal Jacobi operator |
| 15:30:00 - 16:00:00 | Coffee Break | | |
| 16:00:00 - 17:40:00 | **Session "Geodesic Methods with Constraints"**<br>**(J.-M. Mirebeau/L. Cohen)**<br>- Erik Bekkers, Remco Duits, Alexey Mashtakov and Yuri Sachkov. Vessel Tracking via Sub-Riemannian Geodesics on Projective Line Bundle<br>- Da Chen and Laurent Cohen. Anisotropic Edge-based Balloon Eikonal Active Contours<br>- Jean-Marie Mirebeau and Johann Dreo. Automatic differentiation of non-holonomic fast marching for computing most threatening trajectories under sensors surveillance<br>- Rui Vigelis, Luiza Felix and Charles Cavalcante. On the existence of paths connecting probability distributions<br>- Michel Nguiffo Boyom, Aliya Naaz Siddiqui, Wan Ainun Mior Othman and Mohammad Hasan Shahid. Classification Of Totally Umbilical Slant Submanifolds In Holomorphic Statistical Manifolds With Constant Holomorphic Curvature | **Session "Shape Space"**<br>**(S. Allasonnière/S. Durrleman/A. Trouvé)**<br>- Alice Le Brigant, Marc Arnaudon and Frederic Barbaresco. Optimal matching between curves in a manifold<br>- Alexander Schmeding, Elena Celledoni, Sølve Eidnes and Markus Eslitzbichler. Shape Analysis on Lie groups and homogeneous spaces<br>- Boris Khesin, Gerard Misiolek and Klas Modin. Newton's Equation on Diffeomorphisms and Densities<br>- Kathrin Welker. Optimization in the Space of Smooth Shapes<br>- Pierre Roussillon and Joan Alexis Glaunès. Surface Matching Using Normal Cycles | **Session "Divergence Geometry"**<br>**(M. Broniatowski/I. Csiszar)**<br>- Emmanuelle Gautherat, Patrice Bertail and Hugo Harari-Kermadec. Empirical Phi star Divergence Minimizers for Hadamard Differentiable Functionals<br>- Minh Ha Quang. Log-Determinant Divergences Between Positive Definite Hilbert-Schmidt Operators<br>- Wolfgang Stummer and Anna-Lena Kißlinger. Some new flexibilizations of Bregman divergences and their asymptotics<br>- Zuzana Krajcovicova, Pedro Pablo Perez Velasco and Carlos Vazquez. Quantification of Model Risk: Data Uncertainty<br>- Eric Grivel and Léo Legrand. Process comparison combining signal power ratio and Jeffrey's divergence between unit-power signals |
| 17:40:00 - 18:40:00 | Keynote Speaker: **Barbara Tumpach**<br>**Riemannian metrics on shape spaces of curves and surfaces** | | |
| 20:00:00 - 22:00:00 | Gala Diner | | |

| | 09/11/2017 | | |
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| 08:30:00 - 09:00:00 | Registration Desk | | |
| 09:00:00 - 10:00:00 | Keynote Speaker: **Mark Girolami** | | |
| 10:00:00 - 10:30:00 | Coffee Break | | |
| 10:30:00 - 12:30:00 | **Session "Statistical Manifold & Hessian Information Geometry"**<br>**(M. Boyom/H. Matsuzoe/ Hassan Shahid)**<br>- Masayuki Henmi. Statistical Manifolds Admitting Torsion, Pre-contrast Functions and Estimating Functions<br>- Michel Nguiffo Boyom, Mohd Aquib, Mohammad Hasan Shahid and Mohammed Jamali. Generalized Wintegen type inequality for Lagrangian submanifolds in holomorphic Statistical space forms<br>- Ahmed Zeglaoui and Michel Nguiffo Boyom. The functor of Amari and Riemannian dynamics<br>- Hitoshi Furuhata. Sasakian statistical manifolds II<br>- Sergey Grigorian and Jun Zhang. (Para-)Holomorphic Connections for Information Geometry<br>- Hideyuki Ishi. Matrix realization of a homogeneous Hessian domain | | |
| 13:30:00 - 15:30:00 | **Session "Optimal Transport & Applications"**<br>**(J.F. Marcotorchino/A. Galichon)**<br>- Ryo Karakida and Shun-Ichi Amari. Information Geometry of Wasserstein Divergence<br>- Damien Nogues. Anomaly detection in network traffic with a relationnal clustering criterion<br>- Martin Bauer, Sarang Joshi and Klas Modin. Diffeomorphic random sampling using optimal information transport<br>- Olivier Rioul. Optimal Transport to Rényi Entropies | **Session "Monotone Embedding in Information Geometry"**<br>**(J. Zhang/ J. Naudts)**<br>- Jun Zhang and Jan Naudts. Information Geometry Under Monotone Embedding. Part I: Divergence Functions<br>- Jan Naudts and Jun Zhang. Information Geometry Under Monotone Embedding. Part II: Geometry<br>- Hiroshi Matsuzoe, Antonio M. Scarfone and Tatsuaki Wada. A sequential structure of statistical manifolds on deformed exponential family<br>- Luiza Andrade, Rui Vigelis, Leidmar Vieira and Charles Cavalcante. Normalization and varphi-function: definition and consequences<br>- Luigi Montrucchio and Giovanni Pistone. Deformed exponential bundle: the linear growth case<br>- Atsumi Ohara. On affine immersions of the probability simplex and their conformal flattening | **Session "Non-parametric Information Geometry"**<br>**(N. Ay/J. Armstrong)**<br>- John Armstrong and Damiano Brigo. Ito Stochastic Differential Equations as 2-Jets<br>- Van Le, Juergen Jost and Lorenz Schwachhoefer. The Cramer-Rao inequality on singular statistical models<br>- Shinto Eguchi and Katsuhiro Omae. Information Geometry of Predictor Functions in a Regression Model<br>- Giovanni Pistone. Translations in the exponential Orlicz space with Gaussian weight<br>- Marina Santacroce, Paola Siri and Barbara Trivellato. On Mixture and Exponential Connection by Open Arcs |
| 15:30:00 - 16:00:00 | Coffee Break | | |
| 16:00:00 - 17:20:00 | **Session "Optimal Transport & Applications"**<br>**(Q. Merigot/J. Bigot/B. Maury)**<br>- Elsa Cazelles, Jérémie Bigot and Nicolas Papadakis. Regularization of Barycenters in the Wasserstein Space<br>- Giovanni Conforti and Michele Pavon. Extremal curves in Wasserstein space<br>- Bruno Galerne, Arthur Leclaire and Julien Rabin. Semi-Discrete Optimal Transport in Patch Space for Enriching Gaussian Textures<br>- Yunan Yang and Bjorn Engquist. Analysis of Optimal Transport Related Misfit Functions in Seismic Imaging | | |
| 17:20:00 - 17:30:00 | Closing session | | |