Curriculum Vitae (April 11, 2011)

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Education
October 1993 : Doctor(Mathematical Sciences),Graduate School of Mathematical Sciences, The University of Tokyo
March 1988 : Master of Science, Department of Applied Physics, Tokyo Institute of Technology
March 1986 : Bachelor of Science, Department of Mathematics, Tokyo Institute of Technology

Employment
From 04/2010 : Full Professor; Mathematical Institute, Tohoku University
04/2003–03/2010: Full Professor; Graduate School of Engineering Science, Osaka University
04/1999–03/2003: Associate Professor; Graduate School of Engineering Science, Osaka University
04/1994–03/1999: Associate Professor; Graduate School of Information Science, Tohoku University
04/1990–03/1994: Assistant Professor; Mathematical Institute, Tohoku University

Awards
Analysis Prize (Mathematical Society of Japan), 2007.

List of Publications

- Support Theorem for Diffusion Processes on Hilbert Spaces, Publ.Res.Inst.Math.Sci. 26 (1990), no.6, 947–965.

- D^∞-Cohomology Groups and D^∞-Maps on Submanifolds in Wiener Spaces, J. Funct.Anal. 107 (1992), no.2, 289–301.

- On the Support of Wiener Functionals (with D.W.Stroock and S.Kusuoka), Asymptotic Problems in Probability Theory: Wiener functonals and asymptotics (Sanda/Kyoto, 1990), 3–34, Pitman Res. Notes Math. Ser., 284, Longman Sci. Tech., Harlow, 1993.

- Certain gradient flows and submanifolds in Wiener spaces, J. Funct. Anal. 112 (1993), no.2, 346-372.

- On the Ornstein-Uhlenbeck Operators on Wiener-Riemannian Manifolds, J. Funct. Anal. 116(1993), no.1, 83-110.

- Sobolev Spaces over Loop Groups, J. Funct. Anal. 127 (1995), no.1, 155-172.

- Logarithmic Sobolev Inequalities and Exponential Integrability (with T.Masuda (Kobe University of commerce) and I.Shigekawa (Kyoto University)) J. Funct. Anal. 126 (1994), no.1, 83–101

- Logarithmic Sobolev Inequalities and Spectral Gaps : Perturbation Theory, (with I.Shigekawa (Kyoto University)), J. Funct. Anal. 126 (1994),no.2, 448–475.

- Moment Estimates Derived From Poincare and Logarithmic Sobolev Inequalities, (with D.Stroock (MIT)) Math. Res. Lett. 1 (1994) no.1, 75-86.

- On the Irreducibility of Certain Dirichlet Forms on Loop Spaces over Compact Homogeneous Spaces, New Trends in Stochastic Analysis (Charingworth, 1994), 3–42, World Sci. Publishing, River Edge, NJ, 1997.

- Differential calculus on path and loop spaces. I. Logarithmic Sobolev inequalities on path spaces, (with K.D. Elworthy (Warwick University)), C.R.Acad.Sci.Paris Sr. I Math. 321 (1995) no.1, 97–102.

- Logarithmic Sobolev Inequalities on Loop Spaces over compact Reimannian Manifolds, Stochastic Analysis and Applications (Powys 1995), 1–19, World Sci. Publishing, River Edge, NJ 1996.

- Differential Calculus on Path and Loop Spaces, II Irreducibility of Dirichlet Forms on Loop Spaces, Bull. Sci. Math., 122 (1998), no.8, 635–666.

- Gradient Estimates of Harmonic Functions and Asymptotics of Spectral Gaps on Path Sapces, Interdiscip. Inform. Sci. 2 (1996), no.1, 75–84.

- Uniform Positivity Improving Property, Sobolev Inequality and Spectral Gaps, J. Funct.Anal., 158 (1998) no.1, 152–185.

- Stochastic analysis on loop spaces (Japanese) Sugaku 50 (1998), no.3, 265–281.

- Logarithmic derivatives of heat kernels and logarithmic Sobolev inequalities with unbounded diffusion coefficients on loop spaces, J. Funct. Anal. 174 (2000), no.2, 430-477.

- Stochastic analysis on loop spaces, (translation of Sugaku 50 (1998) 265–281) Sugaku Expositions 13 (2000), no.2, 197–214.

- Equivalence of heat kernel measure and pinned Wiener measure on loop groups, (with Bruce Driver), C. R. Acad. Sci. Paris Sr.I Math. 331 (2000), no.9, 709-712.

- On the irreducibility of Dirichlet forms on domains in infinite dimensional spaces, Osaka J. Math. 37, (2000) no.4, 953–966.

- Precise Gaussian lower bounds on heat kernels, "Stochastics in Finite and Infinite Dimensions", 1–28, Trends Math, Birkhäuser Boston, Boston MA 2001.

- Short time asymptotics of a certain infinite dimensional diffusion process, (with Hiroshi Kawabi), Stochastic Analysis and Related Topics VII, The Silivri Workshop, 77–124, Progress in Probability 48, Birkhäuser, 2001.

- On the small time asymptotics of diffusion processes on path groups, (with T-S.Zhang), Potential Analysis Vol.16 (2002), 67–78.

- An estimate of the gap of spectrum of Schrödinger operators which generate hyperbounded semigroups, J. Funct. Anal. Vol.185 (2001) no.2, 474–526.

- On a certain semiclassical problem on Wiener spaces, Publ.Res.Inst.Math.Sci. Vol.39 (2003), no.2, 365–392.

- Semiclassical limit of the lowest eigenvalue of a Schrödinger operator on a Wiener space, J. Funct. Anal. 203 (2003), no.2, 401–424.

- Witten Laplacian on pinned path group and its expected semiclassical behavior, IDAQP, Vol.6, No.supp01,(September 2003) 103–114.

- Weak Poincare inequalities on domains defined by Brownian rough paths, The Annals of Probability, 2004, Vol.32, No.4, 3116–3137.

- Precise Gaussian estimates of heat kernels on asymptotically flat Riemannian manifolds with poles, in "Recent developments in stochastic analysis and related topics", Proceedings of the First Sino-German conference on stochatsic analysis (2002), 1–19, (2004).

- Semi-classical limit of the bottom of spectrum of a Schrödinger operator on a path space over a compact Riemannian manifold, J. Funct. Anal. Volume 251, Issue 1, 59–121, (2007).

- Hadamard's variation and Poincaré's lemma on a certain non-convex domain, Proceedings of RIMS Workshop on Stochastic Analysis and Applications, RIMS Kokyuroku Bessatsu, B6, 1–14, (2008).

- Log-Sobolev inequalities with potential functions on pinned path groups, the special volume for Leonard Gross's 77 birthday, Communications on Stochastic Analysis, Vol.2, No.1, April, 2008.

- Semi-classical limit of the lowest eigenvalue of a Schrödinger operator on a Wiener space : II.$P(\phi)_2$-model on a finite volume, J. Funct. Anal. Vol. 256 (2009) no.10, 3342–3367.

- Semi-classical limit of the lowest eigenvalue of a Schrödinger operator on a Wiener space: I.Unbounded one particle Hamiltonians, in "From probability to geometry (I) Volume in honor of the 60th Birthday of Jean-Michel Bismut", Asterisque, Vol 327, 2009.

- Rough path analysis: An introduction, Advanced Studies in Pure Mathematics 57,2010 Probabilistic Approach to Geometry, 1-28.

- COH formula and Dirichlet Laplacians on small domains of pinned path spaces, to appear in the proceedings of the workshop "Concentration, Functional Inequalities, and Isoperimetry", Contemporary Mathematics.