# CURRICULUM VITAE

**Name:** József Lőrinczi
**Date of Birth:** 26 July 1966
**Nationality:** Dutch

## Education

**1995** PhD in Mathematics, Rijksuniversiteit Groningen

**1990/91** Research Student, École Normale Supérieure, Paris

**1990** MSc in Mathematics, Eötvös Loránd University, Budapest

## Distinctions/Qualifications

**2011**: Fellow of Higher Education Academy, UK
**2005**: Qualification Full Professorship in Mathematics (Ministry of Education, France)

## Current Affiliation

Alfréd Rényi Institute of Mathematics, Budapest, Hungary

## Employment History

**01.07.91-30.06.95** Junior Researcher ('onderzoeker in opleiding'), Institute for Theoretical Physics, Rijksuniversiteit Groningen, the Netherlands

**01.07.95-30.09.96** Post-doctoral Researcher, RU Groningen

**01.10.96-31.10.97** Post-doctoral Researcher, Institute for Theoretical Physics, Katholieke Universiteit Leuven, Belgium

**01.11.97-31.07.98** Research Fellow, Department of Mathematics, Ludwig-Maximilians Universität München, Germany

**01.08.98-30.06.05** Fixed-Time Lecturer, Institute for Applied Probability, Technische Universität München

**01.07.05-31.12.06** Jointly Senior Research Fellow at TU Munich and Project Leader of one-year thematic programme *At the Interface of PDE, Self-Adjoint Operators & Stochastics: Models with Exclusion* at Wolfgang Pauli Institute, University of Vienna

**01.01.07-31.08.07** Senior Research Fellow, Institute for Applied Probability, TU Munich

**01.09.07-31.01.21** Associate Professor in Stochastic Analysis, Loughborough University, UK

## Visiting Positions/Long-Term Visits

- IHES, Bures-sur-Yvette, France (1990, 2008, 2010, 2014-16)
- Kyushu University and RIMS Kyoto (2005, 2007, 2009)
- Wolfgang Pauli Institut, Universität Wien (2006)
- Fields Institute, Toronto (1998)
- École Polytechnique, Palaiseau (1995)

**Membership**

- Young Researcher, Alfred Rényi Institute of Mathematics, Hungarian Academy of Sciences
- Fellow of Higher Education Academy, UK

**Academic Service**

- Guest editor to *Fractal and Fractional*
- MSc Programme Director, Department of Mathematics, Loughborough University
- Co-Director of Doctoral Programmes, School of Science, Loughborough University
- CEE research student recruitment coordinator, Loughborough University
- external referee to research proposals at Isaac Newton Institute, Cambridge (2011), EPSRC (2015), National Science Centre (NCN), Poland (2016)

**Research Area**

Stochastic Processes, Functional Analysis, Mathematical Physics

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**Research Events (Co-)Organised**

- PI in programme *Fractional Differential Equations*, Isaac Newton Institute, Cambridge (2022)
- *Deterministic and Stochastic Fractional Differential Equations and Jump Processes*, INI (2022)
- *Fractional Kinetics, Hydrodynamic Limits and Fractals*, INI Cambridge (2022)
- *From Fractional Sub-Diffusion to the Wave Equation: A ModCompShock Workshop*, Brighton (2019)
- postgraduate school and workshop *Fractional Calculus, Probability and Non-Local Operators — Sixth Meeting*, BCAM, Bilbao (2018)
- postgraduate school and workshop *Fractional Calculus, Probability and Non-Local Operators — Fifth Meeting*, BCAM, Bilbao (2017)
- project leader of *Embedded Eigenvalues*, IHES (2017)
- postgraduate school and workshop *Fractional Calculus, Probability and Non-Local Operators — Fourth Meeting*, BCAM, Bilbao (2016)
- project leader of *Zero-Energy Bound State Decay*, IHES (2016)
- workshop *Probability, Non-Local Operators and Applications*, Brighton (2016)
- postgraduate school and workshop *Fractional Calculus, Probability and Non-Local Operators — Third Meeting*, BCAM, Bilbao (2015)
- mini-symposium *Fractional Calculus and Probability* to the 2015 *AMMCS-CAIMS Congress*, Waterloo, Ontario, Canada (2015)
- project leader of *Jump Processes under Decaying Potentials*, IHES (2015)
- *51st Karpacz Winter School of Theoretical Physics: Irreversible Dynamics: Nonlinear, Nonlocal, Non-Markovian Manifestations* (2015)
- postgraduate school and workshop *Fractional Calculus, Probability and Non-Local Operators — Second Meeting*, BCAM, Bilbao (2014)
- project leader of *Fluctuations of Jump Processes under Potentials*, IHES (2014)
- workshop *Fractional Calculus, Probability and Non-local Operators*, BCAM, Bilbao (2013)

- RIMS Kyoto (2001, 2005); Universities of Nagoya and Sapporo (2001)
- Institute for Advanced Studies, Dublin (2001, 2003)
- Stochastic Analysis Satellite of *International Congress of Mathematics*, and Capital Normal University Beijing (2002)
- Scuola di Matematica, Università La Sapienza, Roma (1999-2009)
- Universität Bielefeld (2003)
- *Problems in Statistical Mechanics*, Potsdam (2004)
- *La Pietra Week in Probability*, Florence (2004)
- Università di Camerino (2004)
- *Open Quantum Systems*, Erwin Schrödinger Institute, Vienna (2005)
- Kyushu University, Fukuoka (2005, 2007); Okayama University (2005, 2007); Kinki University, Iizuka (2005, 2007)
- Probability Seminar, Kyoto University (2007)
- *Complex Quantum Systems*, Erwin Schrödinger Institute, Vienna (2006)
- University of Braunschweig (mini-course, 2007)
- University of Warwick, University of York (2007)
- Imperial College London (2007)
- *Mathematical and Physical Aspects of Perturbative QFT*, ESI, Vienna (2007)
- *Path Integrals-New Trends and Perspectives*, Max Planck Institute, Dresden (2007)
- *Applications of the Renormalization Group*, ESI, Vienna (2007)
- Warwick University (2008)
- *6th Seminar on Stochastic Analysis*, Ascona (2008)
- *24th Max Born Symposium*, Wrocław (2008)
- Erwin Schrödinger Institute, Vienna (2008, 2009)
- IHES, Bures-sur-Yvette (2008, 2009)
- Kyushu University and RIMS Kyoto (2009)
- Conference *Non-Local Operators and Jump Processes*, TU Wrocław (2009)
- *Constructive and Multiscale Methods in Quantum Theory*, Satellite Conference of International Congress of Mathematical Physics, Heidelberg (2009)
- *Stochastic Analysis and Applications*, Hammamet (2009)
- Université El Manar, Tunis (2009)
- IHES, Université Rouen, Université Nancy (2010)
- *Non-Local Operators and PDE*, Bedlewo (2010)
- Università degli Studi, Verona (2010)
- Satellite Workshop, University of York, *Semester on Stochastic Partial Differential Equations*, Isaac Newton Institute for Mathematical Sciences, Cambridge (2010)
- *Rough Paths in Interaction*, IHP Paris (2010)
- National University Singapore (2010)
- *34th Conference on Stochastic Processes and Applications*, Osaka (2010)
- *Stochastic Analysis on Large Scale Interacting Systems*, Tokyo (2010)
- University of Manchester (2010)

- Tarbiat Modares University, Tehran (2018)
- BCAM Bilbao (2018)
- University of Sussex, Brighton (network event, 2019)
- York University (2019)
- Università di Torino (2019)
- Cambridge University (2019)
- Supporting Lecture at LMS Invited Lecture Series *Fractional Calculus and Fractional Stochastic Calculus, Including Rough-Paths, with Applications*, Brunel University, London (2020)
- Università di Torino, MSc School (2020)
- Rényi Institute, Budapest (2021)
- University of Pécs (2022)
- Scuola Superiore Meridionale, Naples (2022)

**Supervision/External PhD Examiner**

- post-docs: Kamil Kaleta (Wroclaw University of Technology, 2016), Toshimitsu Takaesu (Kyushu University, 2011/12), Soumaya Gheryani (Tunis University, 2011, 2013)
- PhD students (recent in Loughborough): Xue Li (perturbations of jump processes, interrupted), Samuel O. Durugo (non-local operators, graduated 2015), Paul Jones (quantum probability, graduated 2013)
- overseas PhD student visitors: Giacomo Ascione (University of Naples, 2019), Achref Majid (Tunis University, 2013), Kamil Kaleta (Wroclaw University of Technology, 2010, 2013)
- twenty-eight MSc students in stochastic analysis/financial mathematics (2007-20)
- three BSc students (discrete probability, inverse spectral theory, combinatorics and extremal set theory; since 2008), one industrial placement student (2012), one Nuffield Foundation research student (2011), one EPSRC research student (2018)
- external examiner to PhD theses by Hélène Quintard (Université Rouen, 2015), Elena Hernández (Warwick University, 2016), Mailan Trinh (University of Sussex, 2018), Laurène Valade (Université Rouen, 2021), internal examiner to Kuanhou Tian (Loughborough, 2016)
- several research students at KU Leuven, TU Munich earlier on

**Publications**

- **Books**

1. J. Lőrinczi, F. Hiroshima and V. Betz: *Feynman-Kac-Type Theorems and Gibbs Measures on Path Space*, vol 1: *Feynman-Kac-Type Formulae and Gibbs Measures*, de Gruyter Studies in Mathematics **34/1**, Walter de Gruyter, Berlin-New York, 576pp, 2020 (ISBN 978-3-11-033039-7; 2nd rev. exp. ed. of [3] below)
2. J. Lőrinczi and F. Hiroshima: *Feynman-Kac-Type Theorems and Gibbs Measures on Path Space*, vol 2: *Applications in Rigorous Quantum Field Theory*, de Gruyter Studies in Mathematics **34/2**, Walter de Gruyter, Berlin-New York, 556pp, 2020 (ISBN 978-3-11-040350-3; 2nd rev. exp. ed. of [3] below)
3. J. Lőrinczi, F. Hiroshima and V. Betz: *Feynman-Kac-Type Theorems and Gibbs Measures on Path Space. With Applications to Rigorous Quantum Field Theory*, de Gruyter Studies in Mathematics **34**, Walter de Gruyter, Berlin-New York, 520pp, 2011 (ISBN 978-3-11-020148-2)

20. J. Lőrinczi, K. Kaleta and S.O. Durugo: Spectral and analytic properties of some non-local Schrödinger operators and related jump processes, *Commun. Appl. Ind. Math.* **6**, 22pp, 2015

21. K. Kaleta and J. Lőrinczi: Pointwise estimates of the eigenfunctions and intrinsic ultracontractivity-type properties of Feynman-Kac semigroups for a class of Lévy processes, *Ann. Probab.* **43**, 1350-1398, 2015

22. F. Hiroshima and J. Lőrinczi: The spectrum of non-local discrete Schrödinger operators with a $\delta$-potential, *Pacific J. Math. Ind.* **6**, 1-6, 2014

23. M. Gubinelli, F. Hiroshima and J. Lőrinczi: Ultraviolet renormalization of the Nelson model through functional integration, *J. Funct. Anal.* **267**, 3125-3153, 2014

24. M. Hirokawa, F. Hiroshima and J. Lőrinczi: Spin-boson model through a Poisson-driven stochastic process, *Math. Zeitschrift* **277**, 1165-1198, 2014

25. F. Hiroshima, T. Ichinose and J. Lőrinczi: Probabilistic representation and fall-off of bound states of relativistic Schrödinger operators with spin 1/2, *Publ. Res. Inst. Math. Sci.* **49**, 189-214, 2013

26. F. Hiroshima and J. Lőrinczi: Lieb-Thirring bound for Schrödinger operators with Bernstein functions of the Laplacian, *Commun. Stoch. Anal.* **6**, 589-602, 2012

27. F. Hiroshima, J. Lőrinczi and T. Takaesu: A probabilistic representation of the ground state expectation of fractional powers of the boson number operator, *J. Math. Anal. Appl.* **395**, 437-447, 2012

28. J. Lőrinczi and J. Małecki: Spectral properties of the massless relativistic harmonic oscillator, *J. Diff. Equations* **253**, 2846-2871, 2012

29. K. Kaleta and J. Lőrinczi: Fractional $P(\phi)_1$-processes and Gibbs measures, *Stoch. Proc. Appl.* **122**, 3580-3617, 2012

30. F. Hiroshima, T. Ichinose and J. Lőrinczi: Path integral representation for Schrödinger operators with Bernstein functions of the Laplacian, *Rev. Math. Phys.* **24**, 1250013, 2012

31. M. Gubinelli and J. Lőrinczi: Gibbs measures on Brownian currents, *Commun. Pure Appl. Math.* **62**, 1-56, 2009

32. F. Hiroshima and J. Lőrinczi: Functional integral representation of the Pauli-Fierz model with spin 1/2, *J. Funct. Anal.* **254**, 2127-2185, 2008

33. F. Hiroshima and J. Lőrinczi: Functional integral representation of nonrelativistic QED, *RIMS Kyoto Kokyuroku* **1600**, 68-91, 2008

34. J. Lőrinczi and N.J. Mauser: A stochastic approach to the bipolaron model, *RIMS Kyoto Kokyuroku* **1482**, 1-10, 2006

35. H.O. Georgii, J. Lőrinczi and J. Lukkarinen: The continuum Potts model at the disorder-order transition – a study by cluster dynamics, *J. Stat. Mech.* **P06011**, 2005

36. V. Betz and J. Lőrinczi: Uniqueness of Gibbs measures relative to Brownian motion, *Ann. I.H. Poincaré* **39**, 877-889, 2003

37. J. Lőrinczi: Towards a theory of renormalization: Renormalization through disagreement percolation, *RIMS Kyoto Kokyuroku* **1275**, 18-30, 2002

38. V. Betz, F. Hiroshima, J. Lőrinczi, Minlos R.A. and H. Spohn: Ground state properties of the Nelson Hamiltonian — A Gibbs measure-based approach, *Rev. Math. Phys.* **14**, 173-198, 2002

3. J. Lőrinczi: The ground state in Nelson's model with or without infrared cutoff, in: *Recent Developments in Stochastic Analysis and Related Topics*, S. Albeverio, Z.H. Ma and M. Röckner (eds.), World Scientific Press, 2004, pp. 309-329
4. J. Lőrinczi: Qualitative properties of the ground state in Nelson's scalar field model – A Gibbs measure-based approach, in: *Disordered and Complex Systems, London, 2000*, A.A.C. Coolen et al (eds.), AIP Publ., vol. 553, 2001, pp. 203-208
5. J. Lőrinczi: Some results on the projected two-dimensional Ising model, in: *Proceedings of the NATO Advanced Workshop 'On Three Levels', 1993, Leuven, Belgium*, Plenum Publishers, 1994, pp. 373-380
6. J. Lőrinczi and M. Winnink: Some results on almost Gibbs states, in: N. Boccara et al, eds., *Proceedings of the NATO Advanced Studies Institute Workshop on Cellular Automata and Cooperative Systems, Les Houches 1992*, Kluwer, 1993, pp. 423-432
7. J. Lőrinczi, T. Harkó and E. Tódor: Kinetical modelling of tumor growth processes, in *Proceedings of the 12th Symposium of Computer Sciences*, 1988

- **Some Teaching Material**

1. J. Lőrinczi: *Lectures on Graph Theory*, Loughborough University
2. J. Lőrinczi: *Lecture Notes to Stochastic Calculus and Theory of Pricing*, Loughborough University
3. J. Lőrinczi: *Lecture Notes and Worked Examples in Probability & Statistics*, Loughborough University
4. J. Lőrinczi: *Domain exit in Lévy-driven systems*, mini-course material (BCAM Bilbao, 2014)
5. J. Lőrinczi: *Direkt-Raum Renormierung in Gitterspinsystemen*, Notizen für Minikurs (TU Braunschweig, 2007)
6. J. Lőrinczi: *Sztochasztikus differenciálegyenletek alkalmazásokkal* (Sapientia Egyetem, Marosvásárhely, 2006)
7. J. Lőrinczi: *Problems in Analysis*, Lecture Notes TU-Munich, 2004
8. J. Lőrinczi: *Ordinary Differential Equations and Dynamical Systems*, Lecture Notes TU-Munich, 2000
9. J. Lőrinczi: *Mesures gibbsiennes sur des réseaux de spin*, notes de cours, 3ème cycle, École Polytechnique, 1995

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