Hiroki Masuda

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Professor

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Specialized Research Fields

Asymptotic statistics, Stochastic process

Appointments held

2004 - 2007	Assistant at Graduate School of Mathematics, Kyushu University, Japan
2007 - 2010	Assistant professor at Graduate School of Mathematics, Kyushu University, Japan
2010 - 2011	Associate professor at Graduate School of Mathematics, Kyushu University, Japan
2011 - 2015	Associate professor at Institute of Mathematics for Industry, Kyushu University, Japan
2015 - 2023	Professor at Department of Mathematical Sciences, Faculty of Mathematics, Kyushu University, Japan
2022 - Present	Professor at Graduate School of Mathematical Sciences, University of Tokyo, Japan

Professional activity

2012-Present	Elected member of ISI (International Statistical Institute)
2013-2017	Associate editor, *Journal of the Japan Statistical Society*
2014 - Present	Associate editor of *Statistical Inference for Stochastic Processes*
2019-2022	Coordinating editor of *Japanese Journal of Statistics and Data Science*
2019-2023	Editor of *Bulletin of Informatics and Cybernetics*; chairman of Research Association of Statistical Sciences
2019 - 2024	Associate editor of *Bernoulli* journal
2021-Present	Associate editor of *Annals of the Institute of Statistical Mathematics*
2022-Present	Editor-in-Chief of *Japanese Journal of Statistics and Data Science*

Academic award and prize

2006	Ogawa Prize, Japan Statistical Society (September 7, 2006)
2014	Research Achievement Award, Japan Statistical Society (September 15, 2014)

Education

1999 Baccalaureate in Science and Engineering, Waseda University, Japan
2001 MSc in Mathematical Sciences, Graduate School of Mathematical Sciences, University of Tokyo, Japan (Master Thesis: "On Parametric Estimation in a Hidden Markov Model")
2004 PhD in Mathematical Sciences, Graduate School of Mathematical Sciences, University of Tokyo, Japan (Ph.D. Thesis: "Some Results Concerning Statistical Inference for Mixing Processes")

Publications (peer-reviewed)

2002 Analytical properties of GIG and GH distributions. (Japanese) *Proceedings of the Institute of Statistical Mathematics* 50, 165–199.
2004 On multidimensional Ornstein-Uhlenbeck processes driven by a general Lévy process. *Bernoulli* 10, 1–24. [doi: 10.3150/bj/1077544605]
2004 An application of the double Edgeworth expansion to a filtering model with Gaussian limit. (with Yoshida, N.) *Statistics and Probability Letters* 70, 37–48. [doi: 10.1016/j.spl.2004.08.002]
2005 Classical method of moments for partially and discretely observed ergodic models. *Statistical Inference for Stochastic Processes* 8, 25–50. [doi: 10.1023/B:SISP.0000049120.83388.89]
2005 Asymptotic expansion for Barndorff-Nielsen and Shephard's stochastic volatility model. (with Yoshida, N.) *Stochastic Processes and their Applications* 115, 1167–1186. [doi: 10.1016/j.spa.2005.02.007]
2005 Simple estimators for parametric Markovian trend of ergodic processes based on sampled data. *Journal of the Japan Statistical Society* 35, no.2, 147–170. [https://doi.org/10.14490/jjss.35.147]
2007 Ergodicity and exponential beta-mixing bound for multidimensional diffusions with jumps. *Stochastic Processes and their Applications* 117, 35–56. [doi: 10.1016/j.spa.2006.04.010]
2008 On stability of diffusions with compound-Poisson jumps. *Bulletin of Informatics and Cybernetics* 40, 61–74. [https://doi.org/10.5109/18994]
2009 Notes on estimating inverse-Gaussian and gamma subordinators under high-frequency sampling. *Annals of the Institute of Statistical Mathematics* 61, 181–195. [doi: 10.1007/s10463-007-0131-7]
2009 Estimation of second-characteristic matrix based on realized multipower variations. (Japanese) *Proceedings of the Institute of Statistical Mathematics* 57, 17–38.
2009 Empirical analysis on jump detection in high-frequency data. (with Morimoto, T.) *Journal of the Japan Statistical Society (Japanese Issue)* 39, no.1, 33–63.
2009 Joint estimation of discretely observed stable Lévy processes with symmetric Lévy density. *Journal of the Japan Statistical Society* 39, no.1, 49–75. [doi: 10.14490/jjss.39.49]
2010 Jarque-Bera normality test for the driving Lévy process of a discretely observed univariate SDE. (with Lee, S.) *Statistical Inference for Stochastic Processes* 13, 147–161. [doi: 10.1007/s11203-010-9043-x]
2010 Approximate self-weighted LAD estimation of discretely observed ergodic Ornstein-Uhlenbeck processes. *Electronic Journal of Statistics* 4, 525–565. [doi: 10.1214/10-EJS565]
2010 On statistical aspects in calibrating a geometric skewed stable asset price model. In Recent Advances in Financial Engineering 2009: Proceedings of the KIER-TMU International Workshop on Financial Engineering 2009, World Scientific Pub Co Inc. (pp.181–202.).
2011 On simulation of tempered stable random variates. (with Kawai, R.) *Journal of Computational and Applied Mathematics* 235, 2873–2887. [doi: 10.1016/j.cam.2010.12.014]

2011 On the local asymptotic behavior of the likelihood function for Meixner Lévy processes under high-frequency sampling. (with Kawai, R.) *Statistics and Probability Letters* 81, 460–469. [doi: 10.1016/j.spl.2010.12.011]

2011 Goodness of fit test for ergodic diffusions by discrete time observations: an innovation martingale approach. (with Negri, I. and Nishiyama, Y.) *Journal of Nonparametric Statistics* 23, 237–254. [doi: 10.1080/10485252.2010.510186]

2011 Exact simulation of finite variation tempered stable Ornstein-Uhlenbeck processes. (with Kawai, R) *Monte Carlo Methods and Applications* 17, 279–300. [doi: 10.1515/mcma.2011.012]

2012 Infinite variation tempered stable Ornstein-Uhlenbeck processes with discrete observations. (with Kawai, R.) *Communications in Statistics - Simulation and Computation* 41, 125–139. [doi: 10.1080/03610918.2011.582561]

2012 An optimal weight for realized variance based on intermittent high-frequency data. (with Morimoto, T.) *Japanese Economic Review* 63, 497–527. [doi: 10.1111/j.1468-5876.2011.00552.x]

2013 Local asymptotic normality for normal inverse Gaussian Lévy processes with high-frequency sampling. (with Kawai, R.) *ESAIM: Probability and Statistics* 17, 13–32. [doi: 10.1051/ps/2011101]

2013 Asymptotics for functionals of self-normalized residuals of discretely observed stochastic processes. *Stochastic Processes and their Applications* 123, 2752–2778. [doi: 10.1016/j.spa.2013.03.013]

2013 Convergence of Gaussian quasi-likelihood random fields for ergodic Lévy driven SDE observed at high frequency. *The Annals of Statistics* 41, 1593–1641. [doi:10.1214/13-AOS1121]

2013 Edgeworth expansion for the integrated Lévy driven Ornstein-Uhlenbeck process. (with Yoshida, N.) *Electronic Communications in Probability* 18, no.94, 1–10. [doi: 10.1214/ECP.v18-2726]

2014 Estimating ergodic process driven by non-Gaussian noise. *Journal of the Japan Statistical Society (Japanese Issue)* 44, no.2, 471–495. [doi: 10.11329/jjssj.44.471]

2014 The YUIMA project: A computational framework for simulation and inference of stochastic differential equations. (with Brouste, A., Fukasawa, M., Hino, H., Iacus, S, Kamatani, K., Koike, Y., Nomura, R., Ogihara, T., Shimuzu, Y., Uchida, M., Yoshida, N.) *Journal of Statistical Software* 57, no.4, 1–51. [doi: 10.18637/jss.v057.i04]

2015 Uniform LAN property of locally stable Lévy process observed at high frequency. (with Ivanenko, D. and Kulik, A. M.) *ALEA - Latin American Journal of Probability and Mathematical Statistics* 12 (2015), 835–862. arXiv:1411.1516

2015 Parametric estimation of Lévy processes. Lévy Matters IV, Estimation for Discretely Observed Lévy Processes, pp.179–286. *Lecture Notes in Mathematics*, Vol. 2128 (2015), Springer.

2017 Moment convergence in regularized estimation under multiple and mixed-rates asymptotics (with Yusuke Shimizu) *Mathematical Methods of Statistics*, 26:(2) (2017, Apr), 81–110. [doi: 10.3103/S1066530717020016] arXiv:1406.6751

2017 On stepwise estimation of Lévy driven stochastic differential equation (Japanese). (with Uehara, Y.) *Proceedings of the Institute of Statistical Mathematics* 65:(1) (2017), 21–38.

2017 Two-step estimation of ergodic Lévy driven SDE. (with Uehara, Y.) *Statistical Inference for Stochastic Processes* 20:(1) (2017, Apr), 105–137. [doi: 10.1007/s11203-016-9133-5] arXiv:1505.01922

2018 Robust relative error estimation. (with Kei Hirose) *Entropy*, 20(9), 632 (2018, Aug). [doi:10.3390/e20090632]

2018 Efficient estimation of stable Lévy process with symmetric jumps. (with Brouste, A.) *Statistical Inference for Stochastic Processes*, 21:(2) (2018, Jul), 289–307. [doi: 10.1007/s11203-018-9181-0]

2018 Schwarz type model comparison for LAQ models. (with Shoichi Eguchi) *Bernoulli*, 24:(3) (2018, Feb), 2278–2327. [doi: 10.3150/17-BEJ928] arXiv:1606.01627

2019 Data driven time scale in Gaussian quasi-likelihood inference (with Shoichi Eguchi) *Statistical Inference for Stochastic Processes*, 22:(3) (2019, Oct), 383–430. [doi: 10.1007/s11203-019-09197-x] arXiv:1801.10378

2019 Bayesian inference for stable Lévy driven stochastic differential equations with high-frequency data (with Jasra, A and Kamatani, K.) *Scandinavian Journal of Statistics*, 46:(2) (2019, June), 545–574. [doi: 10.1111/sjos.12362] arXiv:1707.08788

2019 AIC for non-concave penalized likelihood method. (with Ninomiya, Y., Yusuke Shimizu, and Umezu, Y.) *Annals of the Institute of Statistical Mathematics*, 71:(2) (2019, Apr), 247–274. [https://doi.org/10.1007/s10463-018-0649-x] arXiv:1505.01922

2019 Non-Gaussian quasi-likelihood estimation of SDE driven by locally stable Lévy process. *Stochastic Processes and their Applications*, 129:(3) (2019, Mar), 1013–1059. [doi: 10.1016/j.spa.2018.04.004] arXiv:1608.06758

2021 Estimating diffusion with compound Poisson jumps based on self-normalized residuals (with Uehara, Y.) *Statistical Planning and Inference*, 215 (2021, Dec), 158–183. [doi: 10.1016/j.jspi.2021.02.008] arXiv:1802.03945

2022 Noise inference for ergodic Lévy driven SDE (with Lorenzo Mercuri and Yuma Uehara) *Electronic Journal of Statistics*, 16:(1) (Apr 4, 2022), 2432–2474. [https://doi.org/10.1214/22-EJS2006] arXiv:2111.02049

2023 Optimal stable Ornstein-Uhlenbeck regression. *Japanese Journal of Statistics and Data Science*, 6 (2023, Jun), 573–605. [https://doi.org/10.1007/s42081-023-00197-z] arXiv:2006.04630

2023 Mixed-effects location-scale model based on generalized hyperbolic distribution. (with Yuki Fujinaga) *Japanese Journal of Statistics and Data Science*, 6 (2023, Nov), 669–704. [https://doi.org/10.1007/s42081-023-00207-0] arXiv:2209.14716

2024 Gaussian quasi-information criteria for ergodic Lévy driven SDE. (with Shoichi Eguchi) *Annals of the Institute of Statistical Mathematics*, 76 (Feb 2024) 111–157. [https://doi.org/10.1007/s10463-023-00878-2] arXiv:2203.04039

2024 On local likelihood asymptotics for Gaussian mixed-effects model with system noise (with Takumi Imamura and Hayato Tajima) *Statistics and Probability Letters*, 208, 110074 (May 2024). [https://doi.org/10.1016/j.spl.2024.110074]
Proof and simulation experiments are available at arXiv:2303.16639

2024 Estimation of ergodic square-root diffusion under high-frequency sampling. (with Yuzhong Cheng and Nicole Hufnagel) *Econometrics and Statistics*, 32 (2024, Oct), 73–87. [https://doi.org/10.1016/j.ecosta.2022.05.003] arXiv:2103.15457

2024 Quasi-likelihood analysis for Student-Lévy regression (with Lorenzo Mercuri and Yuma Uehara) *Statistical Inference for Stochastic Processes*, 27 (October 2024), 761–794. [https://doi.org/10.1007/s11203-024-09317-2] arXiv:2306.16790

Preprints (under peer review or revision)

2024 Adaptive ridge approach to heteroscedastic regression (with Ka Long Keith Ho) arXiv:2402.13642
2024 Student t-Lévy regression model in YUIMA (with Lorenzo Mercuri and Yuma Uehara) arXiv:2403.12078
2024 On estimation of heavy-tailed stable linear regression (with Eitaro Kawamo) arXiv:2404.10448
2024 Statistical inference for ergodic diffusion with Markovian switching (with Yuzhong Cheng) arXiv:2410.11333
2024 Gaussian quasi-likelihood analysis for non-Gaussian linear mixed-effects model with system noise (with Takumi Imamura) arXiv:2412.00796
2024 Quasi-likelihood-based EM algorithm for regime-switching SDE (with Yuzhong Cheng) arXiv:2412.06305

Presentations

See the following URL for the complete list from April 2004 to the present:
`https://www.ms.u-tokyo.ac.jp/~hmasuda/talks-e.html`