

# Kenshi Miyabe

## Affiliation

Associate Professor  
Department of Mathematics  
School of Science and Technology  
Meiji University

## URL

<http://kenshi.miyabe.name/wordpress/>

## Email

research@kenshi.miyabe.name  
miyabe@meiji.ac.jp

## Post

Area 2, Bldg-No.6, 6705  
Meiji University  
1-1-1 Higashimita, Tama-ku  
Kawasaki-city, Kanagawa-pref. 214-8571, Japan

## Tel

Tel: +81-44-934-7460  
Extension: 7460

## EDUCATION

*Doctor of Science*, Kyoto University,  
Thesis: “An Extension of van Lambalgen’s Theorem to Infinitely Many Relative 1-Random Reals”  
March 2010

*Master of Science*, Kyoto University,  
Thesis: “Classification of Index Sets of Functions”  
March 2007

*Bachelor of Science*, Kyoto University  
March 2005

## PROFESSIONAL EXPERIENCE

### Employment

*Associate Professor at Meiji University* Oct 2017 -  
*Senior Assistant Professor at Meiji University* Apr 2014 - Sep 2017  
*JSPS Research Fellow at the University of Tokyo* Apr 2013 - Mar 2014  
*Global COE Research Fellow at Kyoto University* Apr 2011 - Mar 2013  
*Global COE Research Fellow at Kyoto University* Apr 2010 - Mar 2011

## RESEARCH INTERESTS

- The theory of algorithmic randomness
- Computable analysis
- Game-theoretic probability
- Philosophy of probability
- Solomonoff's universal induction

## PUBLICATIONS

### Papers with review

1. "Computable prediction", to appear in Lecture Notes in Computer Science, vol 11654.
2. "Uniform relativization", Lecture Notes in Computer Science, vol 11558, pp 50-61, 2019.
3. "Erdos-Feller-Kolmogorov-Petrowsky law of the iterated logarithm for self-normalized martingales: a game-theoretic approach" (with T. Sasai and A. Takemura), Annals of Probability, Vol. 47, No. 2, 1136-1161, 2019.
4. "Muchnik degrees and Medvedev degrees of the randomness notions", Proc. of 14th-15th ALC, pp.108-128, 2019.
5. "Coherence of reducibilities with randomness notions", Theory of Computing Systems, Volume 62, Issue 7, pp 1599-1619, 2018.
6. "Relation between the rate of convergence of strong law of large numbers and the rate of concentration of Bayesian prior in game-theoretic probability" (with R. Sato and A. Takemura), Stochastic Processes and their Applications. Volume 128, Issue 5, Pages 1466-1484, 2018.
7. "Randomness and Solovay degrees" (with A. Nies and F. Stephan), Journal of Logic and Analysis, Vol 10, pp.1-13, 2018.
8. "Using Almost-Everywhere Theorems from Analysis to Study Randomness" (with A. Nies and J. Zhang), The Bulletin of Symbolic Logic, Volume 22, Issue 3, pp. 305-331, 2016.
9. "Reducibilities relating to Schnorr randomness", Theory of Computing Systems, 58(3), 441-462, 2016.
10. "Unified Characterizations of Lowness Properties via Kolmogorov Complexity" (with T. Kihara), Archive for Mathematical Logic: Volume 54, Issue 3, Page 329-358, 2015.
11. "Schnorr triviality and its equivalent notions", Theory of Computing Systems: Volume 56, Issue 3, pp 465-486, 2015.
12. "Derandomization in Game-Theoretic Probability" (with A. Takemura), Stochastic Processes and their Applications 125, 39-59, 2015.
13. "Uniform Kurtz randomness" (with T. Kihara), Journal of Logic and Computation, 24 (4): 863-882, 2014.
14. "Algorithmic randomness over general spaces", Mathematical Logic Quarterly, 60(3), 184-204, 2014.
15. "An optimal superfarthingale and its convergence over a computable topological space", Lecture Notes in Computer Science, 7070, 273-284, 2013.
16. "The law of the iterated logarithm in game-theoretic probability with quadratic and stronger hedges" (with A. Takemura), Stochastic Processes and their Application, 123, 3132-3152, 2013.
17. "Van Lambalgen's Theorem for uniformly relative Schnorr and computable randomness" (with J. Rute), Proceedings of the 12th Asian Logic Conference, 251-270, 2013.
18. " $L^1$ -Computability, Layerwise Computability and Solovay Reducibility", Computability, 2:15-29, 2013.

19. "Characterization of Kurtz Randomness by a Differentiation Theorem", *Theory of Computing Systems*, 52(1):113-132, 2013.
20. "The difference between optimality and universality", *Logic Journal of the IGPL*, 20(1):222-234, 2012.
21. "Convergence of random series and the rate of convergence of the strong law of large numbers in game-theoretic probability" (with A. Takemura), *Stochastic Processes and their Applications*, 122:1-30, 2012.
22. "Truth-table Schnorr randomness and truth-table reducible randomness", *Mathematical Logic Quarterly*, 57(3):323-338, 2011.
23. "An Extension of van Lambalgen's Theorem to Infinitely Many Relative 1-Random Reals", *Notre Dame Journal of Formal Logic*, 51(3):337-349, 2010.

## TALKS

### Selected talks

1. "Uniform relativization", *Computability in Europe 2019*, (19 July, 2019), Durham (UK) invited to a special session
2. "Schnorr triviality via decidable machines", *Computability Theory and Foundations of Mathematics 2019*, (25 Mar, 2019), Wuhan (China) invited
3. "Variants of layerwise computability", *Computability and Complexity in Analysis 2016* (15-17 June 2016), Faro (Portugal), invited
4. "Total-machine reducibility and randomness notions", *Asian Logic Conference 2015* (5 Jan 2015), Mumbai (India), invited
5. "The emergence of probability from randomness and games" (with A. Takemura), *Modeling Market Dynamics and Equilibrium: New Challenges, New Horizons*, Aug 2013, Munich (Germany) (invited).
6. " $L^1$ -computability and the computability of conditional probability", *Analysis, Randomness and Applications 2013*, June 2013, Nancy (France) (invited).
7. "Characterization of Kurtz randomness by a differentiation theorem", *Twelfth Asian Logic Conference*, Dec 2011, Wellington (New Zealand) (invited).
8. "Randomness and separation axioms", *Analysis and Randomness in Auckland*, Dec 2011, Auckland (New Zealand) (invited).

## MEMBERSHIPS

<i>Association for Symbolic Logic</i>	June 2013 -
<i>The Mathematical Society of Japan</i>	Apr 2012 -
<i>Association Computability in Europe</i>	July 2011 -

## LANGUAGES

*JAPANESE*: Mother language

*ENGLISH*: Fluent

Last updated: August 21, 2019