

## Curriculum Vitae

Department of Mathematics and  
Research Institute for Natural Sciences,  
Hanyang University,  
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Name: Jinyeong Park  
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### Appointments

- Assistant Professor, Department of Mathematics, College of Natural Sciences, Hanyang University, Seoul, Korea, March 2018 - Present.

### Degrees & Academic Experiences

- B.S. Mathematics, Seoul National University, August 2010.
- M.S. Mathematics, Seoul National University, August 2013.
  - Thesis Title: Asymptotic alignment of particle model with attractive-repulsive coupling.
  - Thesis Advisor : Prof. Seung-Yeal Ha.
- Ph.D. Mathematics, Seoul National University, August 2016.
  - Thesis Title: On the asymptotic dynamics of particle and kinetic Kuramoto synchronization models
  - Thesis Advisor : Prof. Seung-Yeal Ha.
- Postdoctoral Researcher (Mentor: Prof. Juan Soler), Departamento de Matemática Aplicada, Facultad de Ciencias, Universidad de Granada, Spain, November 2016 - January 2018.

### Publications

[MathSciNet](#)   [Google Scholar](#)

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- Remarks on the complete synchronization of the Kuramoto oscillators (with S.-Y. Ha and H. K. Kim). [Nonlinearity](#), 28 (2015), no. 5, 1441-1462.
  - Emergence of phase-locked states for the Winfree model in a large coupling regime (with S.-Y. Ha and S. W. Ryoo). [Discrete and Continuous Dynamical Systems - Series A](#), 35 (2015), no. 8, 3417-3436.
  - Practical synchronization of generalized Kuramoto systems with an intrinsic dynamics (with S.-Y. Ha and S. E. Noh). [Networks and Heterogeneous Media](#), 10 (2015), no. 4, 787 - 807.
  - Emergent dynamics of Winfree oscillators on locally coupled networks (with S.-Y. Ha, D. Ko, and S. W. Ryoo). [Journal of Differential Equations](#), 260 (2016), no. 5, 4203 - 4236.
  - Synchronization of the Kuramoto oscillators with adaptive couplings (with S.-Y. Ha and S. E. Noh). [SIAM Journal on Applied Dynamical Systems](#), 15 (2016), no. 1, 162-194.
  - Collective synchronization of classical and quantum oscillators (with S.-Y. Ha, D. Ko, and X. Zhang) [EMS Surveys in Mathematical Sciences](#), 3 (2016), no. 2, 209 - 267
  - Emergence of partial locking states from the ensemble of Winfree oscillators (with S.-Y. Ha, D. Ko, and S. W. Ryoo). [Quarterly of Applied Mathematics](#), 75 (2017), 39 - 68.
  - On the global well-posedness of BV weak solutions to the Kuramoto-Sakaguchi equation (with D. Amadori and S.-Y. Ha). [Journal of Differential Equations](#), 262 (2017), no. 2, 978 - 1022.
  - Interplay of inertia and heterogeneous dynamics in an ensemble of Kuramoto oscillators (with S.-Y. Ha and S. E. Noh). [Analysis and Applications](#), 15 (2017), no. 6, 837 - 861.
  - A nonlocal version of Wavefront tracking motivated by Kuramoto-Sakaguchi equation (with D. Amadori and S.-Y. Ha). [Springer INdAM Inovative Algorithms and Analysis](#).
  - Emergent dynamics of Kuramoto oscillators with adaptive couplings: conservation law and fast learning (with S.-Y. Ha, J. Lee, and Z. Li). [SIAM Journal on Applied Dynamical Systems](#), 17 (2018), no. 2, 1560 - 1588.
  - Uniform stability and mean-field limit for the augmented Kuramoto model (with S.-Y. Ha, J. Kim, and X. Zhang). [Networks and Heterogeneous Media](#), 13 (2018), no. 2, 297 - 322.
  - Remarks on the complete synchronization for the Kuramoto model with interaction frustrations (with S.-Y. Ha and H. K. Kim). [Analysis and Applications](#), 15 (2018), no. 4, 525 - 563

- Emergent Dynamics for the Kinetic Kuramoto Equation (with D. Amadori). [Theory, Numerics and Applications of Hyperbolic Problems I, Springer Proceedings in Mathematics & Statistics \(2018\)](#)
- On the global existence of weak solutions for the Cucker-Smale-Navier-Stokes system with shear thickening (with S.-Y. Ha, H. K. Kim, and J.-M. Kim). [SCIENCE CHINA Mathematics, 61 \(2018\) no. 11, 2033 - 2052.](#)
- A first-order reduction of the Cucker-Smale model and its clustering dynamics (with S.-Y. Ha and X. Zhang). [Communications in Mathematical Sciences, 16 \(2018\) no. 7, 1907 - 1931.](#)
- Complete cluster predictability of the Cucker-Smale flocking model on the line (with S.-Y. Ha, J. Kim and X. Zhang). [Archive for Rational Mechanics and Analysis, 231 \(2019\) no. 1, 319-365.](#)
- Emergent behaviors of the swarmalator model for position-phase aggregation (with S.-Y. Ha, J. Jung, J. Kim and X. Zhang). [Mathematical Models and Methods in Applied Sciences, 29 \(2019\) no. 12, 2225 - 2269.](#)
- Emergence of phase concentration for the Kuramoto-Sakaguchi equation (with S.-Y. Ha, Y. H. Kim, and J. Morales). [Physica D, 401 \(2020\) 132154.](#) Preprint [arXiv:1610.01703](#)
- A global well-posedness and asymptotic dynamics of the kinetic Winfree equation (with S.-Y. Ha, and X. Zhang). [Discrete and Continuous Dynamical Systems Series B, 25\(4\) \(2020\) 1317 - 1344.](#)
- Fast and slow velocity alignments in a Cucker-Smale ensemble with adaptive couplings (with S.-Y. Ha and D. Kim) [Communications on Pure and Applied Analysis, 19\(9\) \(2020\) 4621-4654.](#)
- A mean-field limit of the swarmalator model (with S.-Y. Ha, J. Jung, J. Kim and X. Zhang). [Kinetic & Related Models, 14\(3\) \(2021\) 429-468.](#)
- Filippov trajectories and clustering in the Kuramoto model with singular couplings (with D. Poyato and J. Soler). [Journal of the European Mathematical Society, 23\(10\) \(2021\) 3193–3278.](#) Preprint [arXiv:1809.04307.](#)
- Local well-posedness of the Vlasov-Chern-Simons equation (with J. Kim and B. Moon) submitted.
- Fast and slow clustering dynamics of Cucker-Smale ensemble with internal oscillatory phases (with S.-Y. Ha and J. Kim) submitted.

## Talks

- Dec. 6, 2013, PARC Annual Research Performance Report, Seoul National University, Korea : “*Practical synchronization of Kuramoto system with an intrinsic dynamics*”

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- Jan. 23, 2014, East Asian Core Doctorial Forum on Mathematics, Kyoto University, Japan : *“Practical synchronization of Kuramoto system with an intrinsic dynamics”*
  - Oct. 28, 2014, Young Researchers Workshop: Multiscale phenomena: modeling, analysis and computation, CSCAMM, University of Maryland, USA: *“Practical synchronization of Kuramoto system with an intrinsic dynamics”*
  - Jan. 27, 2015, Department of Information Engineering, Computer Science and Mathematics, University of L’Aquila, Italy : *“Practical synchronization of Kuramoto system with an intrinsic dynamics”*
  - Feb. 25. 2015, PARC Monthly Colloquium, Seoul National University, Korea: *“Emergence of phase-locked states for the Winfree model in a large coupling regime”*
  - Oct. 22. 2015, Séminaire Analyse à Lyon, École Normale Supérieure de Lyon, France: *“Emergent dynamics of Winfree oscillators on locally coupled networks”*
  - Dec. 11. 2015, Departamento de Matemática Aplicada, Universidad de Granada, Spain: *“Emergent dynamics of Winfree oscillators on locally coupled networks”*
  - Jan. 08. 2016, PARC Annual Research Performance Report, Seoul National University, Korea: *“Emergent dynamics of Winfree oscillators on locally coupled networks”*
  - Apr. 27. 2016, Department of Mathematics and Computer Science, University of Ferrara, Italy: *“Synchronization of Kuramoto oscillators with adaptive couplings”*
  - May. 21. 2016, KSIAM 2016 Spring Conference, National Institute for Mathematical Sciences, Korea: *“Synchronization of Kuramoto oscillators with adaptive couplings”*
  - Aug. 4. 2016, XVI International Conference on Hyperbolic Problems: Theory, Numerics, Applications, RWTH Aachen University, Germany: *“Emergence of synchronization for the Kuramoto-Sakaguchi equation”*
  - Dec. 1. 2016, Departamento de Matemática Aplicada, Universidad de Granada, Spain: *“Emergence of synchronization in the Kuramoto model”*
  - Dec. 12. 2016, CMC Winter School on Applied Math and Math. Physics, KIAS and Seoul National University, Korea: *“Emergence of synchronization for the Kuramoto-Sakaguchi equation”*
  - Dec. 28. 2016, Department of Mathematics, Sungkyunkwan University, Korea: *“Emergence of synchronization for the Kuramoto-Sakaguchi equation”*
  - Jun. 26. 2017, XXV Conference on Differential Equations and Applications / XV Conference on Applied Mathematics, Technical University of Cartagena(UPCT), Spain: *“Uniform stability and mean-field limit for the augmented Kuramoto model”*
  - Aug. 16. 2017, Department of Mathematics, Sungkyunkwan University, Korea: *“Multi-cluster flocking of the Cucker-Smale model in one spatial dimension”*

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- Aug. 17. 2017, Department of Mathematics, Inha University, Korea: *“Uniform stability and mean-field limit for the augmented Kuramoto model”*
  - Aug. 22. 2017, CMC Conference: Nonlinear dynamics of many-body systems and related topics, KIAS and Seoul National University, Korea: *“Hebbian learning in the Kuramoto model with regular and singular weighted couplings”*
  - Nov. 16. 2017, Department of Information Engineering, Computer Science and Mathematics, University of L’Aquila, Italy: *“Complete cluster predictability of the Cucker-Smale flocking model on the real line”*
  - Dec. 28. 2017, One day workshop on Mathematical Modelling of Swarming, Department of Mathematics, Inha University, Korea: *“Hebbian learning in the Kuramoto model with regular and singular weighted couplings”*
  - Jun. 21. 2018, Korea PDE Workshop 2018, National Institute for Mathematical Sciences, Korea: *“Complete cluster predictability of the Cucker-Smale flocking model on the real line”*
  - Jun. 28. 2018, XVII International Conference on Hyperbolic Problems: Theory, Numerics, Applications, Penn State University, USA: *“Hebbian learning and clustering in Kuramoto models with singular weighted couplings”*
  - Aug. 6. 2018, International workshop on “Modeling and analysis of multi-agent systems”, Harbin Institute of Technology, China: *“Hebbian learning and clustering in Kuramoto models with singular weighted couplings”*
  - Aug. 29. 2018, Department of Information Engineering, Computer Science and Mathematics, University of L’Aquila, Italy: *“Hebbian learning and clustering in Kuramoto models with singular weighted couplings”*
  - Feb. 15. 2019, Macroscopic Modeling of Vehicular and Pedestrian Traffic, University of Modena & Reggio Emilia, Italy: *“Emergent behaviors of the swarmalator model for position-phase aggregation”*
  - Apr. 3. 2019, Seminar for undergraduate students, Kyung Hee University, Korea: *“Mathematical Modeling”*
  - Sep. 8, 2019, Workshop on Complex Dynamics of Swarm Intelligence (Modeling, Analysis and Applications), Department of Mathematical Sciences, Seoul National University, Korea : *“Emergent behaviors of the swarmalator model for position-phase aggregation”*
  - Oct. 26, 2019, 2019 KMS Annual Meeting, Hongik University, Korea : *“Emergent behaviors of the swarmalator model for position-phase aggregation”*

## Posters

- Jun. 8 - 12, 2015, Summer school on Geometric methods for PDEs and dynamical systems, ANR Weak KAM beyond Hamilton-Jacobi, Porquerolles, France: *“Emergence of phase-locked states for the Winfree model in a large coupling regime”*

- Jul. 6 - 10, 2015, Equadiff 2015, Université Claude Bernard Lyon 1, Lyon, France: “*Emergence of phase-locked states for the Winfree model in a large coupling regime*”

## Organize

- Seminar on particle and kinetic models describing collective behaviors, Hanyang University, Korea, June 18, 2018.
- Special session “Nonlocal Differential Equation: Analysis and Numerics”, 2019 KMS Spring meeting, Kangwon National University, Korea, April 20, 2019.
- HY-PDE workshop on hyperbolic and kinetic problems, Hanyang University, Korea, May 3, 2019.
- The 4th Meeting of Young Researchers in PDEs, Hanyang University, Korea, October 11-12, 2019.
- Special session “Organized Behaviors Arising from Non-organized Dynamic Rules: Particle, Kinetic and Fluid”, 2020 KMS Spring meeting, Online conference, July 3, 2020.
- HY-PDE workshop, Online conference, May 26th - 28th, 2021.
- HY-PDE workshop, Hanyang University, Korea, July 18th - 20th, 2022.
- HYKE meeting 2022, Hanyang University, Korea, August 29th, 2022.

## Research Grant

- Foster Core Leaders of the Future Basic Science Program, National Research Foundation of Korea, 2014. 3 – 2016. 8
- Settlement support grant, Hanyang University, 2018, 3 – 2019, 8
- First Research in Lifetime, National Research Foundation of Korea, 2018. 3 – 2021. 2
- Basic Research Laboratory, National Research Foundation of Korea, 2020. 7 – 2023. 2

## Teaching

- 2022 Spring & Fall : Calculus 1&2, Advanced Calculus 1&2, Capston PBL(Introductory to dynamical systems)
- 2021 Spring & Fall : Advanced Calculus 1&2, Complex Analysis 1&2

- 2020 Spring & Fall : Complex Analysis 1&2, Vector Calculus, Capston PBL(Introductino to dynamical systems)
- 2019 Spring & Fall : Advanced Calculus 1&2, Topics in Analysis: Dynamical systems(graduate)
- 2018 Spring & Fall : Partial Differential Equations and Applications, Vector Calculus, Real Analysis (graduate)
- Teaching Assistant, Department of Mathematical Sciences, Seoul National University, 2012. 9 – 2016. 8.
  - Subject: Calculus, Analysis, Engineering Mathematics, Chaos and Dynamical Systems, Ordinary Differential Equations, and Partial Differential Equations.

Last updated: September 19, 2022