

Ábel Ságodí

PhD Student in Neuroscience

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RESEARCH EXPERIENCE

PhD Student Champalimaud Centre for the Unknown, Lisbon, Portugal <i>Advisor: Prof. Memming Park</i>	2021–Present
Research Intern Flatiron Institute, New York, USA <i>Advisor: Prof. Mitya Chklovskii</i>	Jun–Aug 2025
Research Assistant Kavli Institute for Systems Neuroscience, Trondheim, Norway <i>Advisor: Prof. Yasser Roudi</i>	Sep 2020– Feb 2021

EDUCATION

MSc in Mathematics, Track Mathematical Physics University of Amsterdam, The Netherlands <i>Thesis: Conley Index Theory in Neuroscience (with Kathryn Hess at EPFL)</i>	2017–2020
MSc in Computational Science University of Amsterdam, The Netherlands <i>Thesis: Categorizing Attractor Dynamics in Neural Data</i>	2017–2019
Double BSc in Mathematics and Physics University of Amsterdam, The Netherlands <i>Thesis: The Qutrit in the Fibonacci Anyon Model</i>	2014–2017
BSc in Neuroscience (Honours) University of Amsterdam, The Netherlands <i>Thesis: Alternative Circuits and Interleaved Learning in the Hippocampus</i>	2012–2015

PUBLICATIONS

Peer-Reviewed Articles

1. **Ságodí, Á.**, Pughe-Sanford, J. L., Ding, X., & Chklovskii, D. B. (2026). *Data-Enabled Local Reach-Avoid Control Near Saddle Equilibria with a Neuronal Interpretation*. To appear in *IEEE Conference on Decision and Control (CDC)*.
2. Liang, A., **Ságodí, Á.**, Sokół, P. A., & Park, I. M. (2025). *Symmetry-Regularized Learning of Continuous Attractor Dynamics*. NeurIPS 2025 Workshop on Symmetry and Geometry in Neural Representations. openreview:W8Gf7CYCo8.
3. **Ságodí, Á.**, Martin-Sanchez, G., Sokół, P. A., & Park, I. M. (2024). *Back to the Continuous Attractor*. Thirty-eighth Annual Conference on Neural Information Processing Systems. openreview:fvG6ZHRH0B.

Manuscripts Under Review & Preprints

1. Chitic, R., Gkaniyas, E., **Ságodí, Á.**, Chicca, E., & Webb, B. (2026). *Attractor working memory as a potential basis for insect path integration*. Under review at *Biological Cybernetics*.

2. **Ságodi, Á.**, & Park, I. M. (2026). *Universal Approximation Theorems for Dynamical Systems with Infinite-Time Horizon Guarantees*. arXiv:2602.08640. **[Under Review]**
3. **Ságodi, Á.**, & Park, I. M. (2025). *Dynamical Archetype Analysis: Autonomous Computation*. arXiv:2507.05505. **[Under Review]**
4. Park, I. M., **Ságodi, Á.**, & Sokół, P. A. (2023). *Persistent Learning Signals and Working Memory without Continuous Attractors*. arXiv:2308.12585. **[Preprint]**

INVITED TALKS

1. **Ságodi, Á.** (28-10-2025). *Approximate Continuous Attractor Theory*. The Max Planck Institute for Neurobiology of Behavior-caesar, Bonn, Germany.
2. **Ságodi, Á.** (30-09-2025). *The neuron as a controller of stochastic dynamics*. Bernstein Workshop, Frankfurt, Germany.

CONTRIBUTED TALKS

1. **Ságodi, Á.** (24-07-2026 **[Upcoming]**). *From Trajectories to Dynamical Archetypes: Uncovering Interpretable Neural Dynamics*. Dynamics Days Europe, Minisymposium: Dynamics, Computations and Learning in Living Systems, Lisbon, PT.
2. **Ságodi, Á.**, & Sung, D. (19-06-2026). *Model-Based Reasoning in Neuroscience: Two laboratories, two cycles, and the checks an AI co-scientist must pass*. 10th International Conference on Model-Based Reasoning: Epistemology, Artificial Intelligence, Cognitive Science, Rome, IT.
3. **Ságodi, Á.**, Drukarch, B., & de Bruin, L. (25-05-2026). *The intractability of difference-making without dynamical systems theory*. Scientific Understanding and Representation Workshop, Warsaw, PL.
4. **Ságodi, Á.** (10-11-2023). *RNNs with Gracefully Degrading Continuous Attractors*. Janelia Junior Scientist Workshop on Theoretical Neuroscience, Janelia Research Campus, Ashburn, Virginia, US.
5. **Ságodi, Á.** (10-09-2023). *RNNs with Gracefully Degrading Continuous Attractors*. Analytical Connectionism Workshop, London, UK.
6. **Ságodi, Á.** (17-09-2021). *Conceptualizing explanations through category theory*. Neuromonster, ICNAAM, Rhodes, GR.

POSTERS

1. **Ságodi, Á.**, Podlaski, W., & Ferreira Pica, I. (21-07-2026 **[Upcoming]**). *Piecewise Projective Maps for Analytical Solutions of Spiking Neural Network Dynamics*. Dynamics Days Europe, Lisbon, PT.
2. **Ságodi, Á.**, & Park, I. M. (21-07-2026 **[Upcoming]**). *Universal Approximation Theorems for Dynamical Systems with Infinite-Time Horizon Guarantees*. Dynamics Days Europe, Lisbon, PT.
3. Liang, A., **Ságodi, Á.**, & Park, I. M. (14-03-2026). *Symmetry-Regularized Learning of Continuous Attractor Dynamics*. COSYNE, Lisbon, PT.
4. **Ságodi, Á.**, & Park, I. M. (13-03-2026). *Dynamical Archetype Analysis: Autonomous Computation*. COSYNE, Lisbon, PT.
5. Chklovskii, D. B., Pughe-Sanford, J. L., Ding, X., & **Ságodi, Á.** (12-03-2026). *The neuron as a stochastic feedback controller*. COSYNE, Lisbon, PT.
6. Liang, A., **Ságodi, Á.**, & Park, I. M. (15-12-2025). *Symmetry-Regularized Learning of Continuous Attractor Dynamics*. NeurIPS 2025 Workshop on Symmetry and Geometry in Neural Representations.
7. **Ságodi, Á.**, & Park, I. M. (15-10-2025). *Dynamical Archetype Analysis: Autonomous Computation*. Champalimaud Research Symposium, Lisbon, PT.
8. **Ságodi, Á.**, Pughe-Sanford, J. L., & Chklovskii, D. B. (06-08-2025). *The neuron as a stochastic feedback controller*. Flatiron Institute, NY, US.

9. **Ságodi, Á.**, & Park, I. M. (11-07-2025). *Dynamical Archetype Analysis: Autonomous Computation*. Junior Theoretical Neuroscientist Workshop, Flatiron Institute, NY, US.
10. **Ságodi, Á.**, Martin-Sanchez, G., Sokół, P. A., & Park, I. M. (29-03-2025). *Approximate Continuous Attractor Theory*. COSYNE, Montreal, CA.
11. **Ságodi, Á.**, Martin-Sanchez, G., Sokół, P. A., & Park, I. M. (12-12-2024). *Back to the Continuous Attractor*. NeurIPS, Vancouver, CA.
12. **Ságodi, Á.**, Park, I. M., & Sokół, P. A. (01-10-2024). *Slow Manifold Dynamics for Working Memory are near Continuous Attractors*. Bernstein Conference, Frankfurt, DE.
13. **Ságodi, Á.**, Park, I. M., & Sokół, P. A. (09-11-2024). *RNNs with Gracefully Degrading Continuous Attractors*. Janelia Junior Scientist Workshop on Theoretical Neuroscience, US.
14. **Ságodi, Á.**, Park, I. M., & Sokół, P. A. (11-09-2023). *RNNs with Gracefully Degrading Continuous Attractors*. Analytical Connectionism Summer School, Gatsby, London, UK.
15. **Ságodi, Á.** (17-07-2021). *Conceptualizing explanations through category theory*. 4th International Conference on Applied Category Theory, University of Cambridge, UK.

TEACHING EXPERIENCE

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|---|-----------|
| • Teaching Assistant , Time Series Analysis (INCDP)
<i>Champalimaud Centre</i> | 2023 |
| • Teaching Assistant , Linear Dynamical Systems (INCDP)
<i>Champalimaud Centre</i> | 2022 |
| • Teaching Assistant , Open Ephys Course
Online, May 23-28 | 2022 |
| • Teaching Assistant , Mathematics for Physicists 2
<i>University of Amsterdam</i> | 2017 |
| • Tutor , Mathematics, Physics, Chemistry, Biology
<i>StudentsPlus, Netherlands</i> | 2012–2015 |

AWARDS

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| • Presenters Travel Grant , COSYNE (Awarded for top reviewer ranking) | 2025 |
| • Amsterdam University Fund Scholarship (for exchange to EPFL) | 2019 |
| • Amsterdam University Fund Scholarship (for exchange to NUS) | 2016 |
| • First Prize , <i>Explore the High-energy Universe</i> (European Space Agency) | 2012 |

PEER REVIEWING

- **2026**: CDC (1)
- **2025**: ICML (5), TMLR (4), NeurIPS (6, Top Reviewer)
- **2024**: ICML (6), AISTATS (2), NeurIPS (6, Top Reviewer)
- **2023**: ICML (3), ICLR (6), NeurIPS (7)

TECHNICAL SKILLS

Programming: Python, Matlab, Mathematica, R, C++, Bonsai.