

Maciej Głuchowski

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Research Interests

Probability theory; interacting particle systems; stochastic dynamics and statistical mechanics; AI-assisted verification and assessment of mathematical work.

Education

University of California, Los Angeles <i>Ph.D. in Mathematics; advisor: Georg Menz</i>	2024–2028 (expected) <i>Los Angeles, USA</i>
University of Warsaw <i>M.Sc. in Mathematics; advisor: Jacek Miękiś</i>	2022–2024 <i>Warsaw, Poland</i>
University of Warsaw <i>B.Sc. in Mathematics; advisor: Jacek Miękiś</i>	2019–2022 <i>Warsaw, Poland</i>

Publications

- M. Głuchowski and G. Menz. “Ergodicity criterion for one-sided, one-dimensional IPS with a long-lived state.” *Electronic Communications in Probability* **31** (2026)
- E. Athaide, M. Głuchowski, J. Köppl, and G. Menz. “A correlation bound for the one-dimensional heterogeneous Ising model.” *Electronic Communications in Probability* **31** (2026), article 45
- M. Głuchowski and G. Menz. “Time-scaling, ergodicity, and covariance decay of interacting particle systems.” *Journal of Statistical Physics* **192** (2025), article 6

Research Experience

Graduate Student Researcher <i>UCLA Department of Mathematics</i>	October 2024–present <i>Los Angeles, USA</i>
- Current project: developing and analyzing a particle-based stochastic differential equation model for cancer growth, advised by Georg Menz and in collaboration with Marek Biskup. - Summer 2026: held a 25% UCLA GSR appointment supported by IPAM funding to study AI-assisted verification of mathematical work using AGrade.	
Visiting Researcher <i>UCLA Department of Mathematics</i>	February–May 2023 <i>Los Angeles, USA</i>
Developed, with Georg Menz, a time-scaling argument that extends ergodicity criteria and a recursive criterion for decay of correlations in interacting particle systems. This work resulted in the 2025 article listed above.	
Undergraduate Researcher <i>University of Warsaw</i>	October 2020–January 2023 <i>Warsaw, Poland</i>
Studied ergodicity criteria for probabilistic cellular automata with Jacek Miękiś through the Szkoła Orłów research program.	

Software Project

AGrade (Automatic Grader) <i>Primary developer; joint project with Georg Menz</i>	January 2026–present <i>UCLA</i>
- Co-designed the system architecture with Georg Menz, using AI agents to grade mathematics exams and homework. - Implemented nearly the entire JavaScript and TypeScript codebase and led most design decisions; major architectural choices were made jointly with Menz. - Used extensively to grade exams and homework in at least three UCLA courses, with additional testing by other instructors; internal evaluation is ongoing.	

Teaching Experience

Teaching Assistant, UCLA Department of Mathematics		October 2024–present
Fall 2026 (appointed)	Math 31A, Differential and Integral Calculus; Math 170E, Introduction to Probability	
Spring 2026	Math 171, Stochastic Processes; Computing 10A, Introduction to Programming	
Winter 2026	Math 32A, Calculus of Several Variables; Computing 10A, Introduction to Programming	
Fall 2025	Math 170E, Introduction to Probability	
Winter–Spring 2025	Computing 10A, Introduction to Programming	
Fall 2024	Math 33A, Linear Algebra and Applications	
Grader, University of Warsaw Department of Mathematics		October 2020–May 2021

Research Presentations

- “Vibe code your agent,” UCLA Thursday Colloquium and AI in Research and Education Seminar, June 2026.
- “Ergodicity of the East model with noise,” UCLA Probability Seminar, 2025.
- “Progress on the positive rates conjecture,” UCLA informal seminar, 2023.
- “Ergodicity of interacting particle systems,” Analysis in the Tatras, Małe Ciche, 2023.
- “Introduction to the positive rates conjecture,” Beyond the Horizon, Będlewo, 2022.
- “Collective memory,” Beyond the Horizon, Będlewo, 2021.

Awards and Research Support

Research Allowance Program Grant (\$5,000)	2026–2027
<i>UCLA Academic Senate Council on Research</i>	<i>Computational support</i>
Graduate Dean’s Scholar Award (\$14,500)	2024–2026
<i>University of California, Los Angeles</i>	
Mobility of Students Grant (\$12,500)	2023
<i>University of Warsaw Excellence Initiative (IDUB)</i>	<i>Research visit at UCLA</i>
Rector’s Scholarship	2022–2023
<i>University of Warsaw</i>	
Krok w Przyszłość VII	2022
<i>mBank Foundation</i>	<i>Award for an outstanding bachelor’s thesis</i>
Szkoła Orłów Research Grant (\$12,000)	2020–2023
<i>University of Warsaw</i>	

Technical Skills

Programming: TypeScript, JavaScript, Python, C++	Tools: Git/GitHub, L ^A T _E X
AI systems: Development and evaluation of tools for mathematical reasoning and grading.	