Dr **Krzysztof Malarz**, D.Sc., Ph.D., M.Sc.
Associate Professor & Head of Department
ORCID: 0000-0001-9980-0363

AGH University of Kraków
Faculty of Physics and Applied Computer Science
Department of Applied Informatics and Computational Physics
Complex Systems Group

Teaching and supervising

April 1, 2025

1 Teaching

2023/10–2024/09 mentor of "Computer Physics" field of study

1.1 Units

1.1.1 Ph.D. studies

2024: opinion dynamics (workshops)
2019– workshops on writing and preparation of scientific publications (workshops)

1.1.2 M.Sc. studies

2022– research activities (workshops)
2022– physics of complex systems (laboratory classes)
2021– computational sociology (workshops)
2016, 2020– master's thesis seminar (seminar classes)
2001– cellular automata (lectures, project classes)

1.1.3 B.Sc. studies

2025– thermodynamics and statistical physics (auditorium classes)
2015–2016, 2023: procedural programming (laboratory classes)
2014– edition and presentation of scientific text (lectures, seminar classes, laboratory classes)
2013–2017: selected topics in modern physics and chemistry (seminar classes)
2013–2015: statistics for engineers (auditorium classes, laboratory classes)
2006–2011: numerical methods for engineers (laboratory classes)
2001–2022: numerical methods (lectures, laboratory classes)
2001–2006: computational physics (laboratory classes)
1997–2005: physics (auditorium classes, laboratory classes)

2 Promotion proceedings

2.1 Chairing

2.1.1 Ph.D. proceedings committees

Jakub Kamiński (2024, AGH), Mateusz Buczkowski (2024, AGH)

2.1.2 M.Sc. proceedings committees

chairing over 700 promotion committees in 2005/09–2012/08

2.2 Supervising

2.2.1 Ph.D. thesis

Marcin Rybak (2017, AGH, as auxiliary supervisor)

2.2.2 M.Sc. thesis

Paweł Szczepaniak (expected 2025), Maciej Dworak (2022), Szymon Biernacki (2021), Kondrad Pasik & Marcin Miś (2021), Joanna Wańczyk (2019, supervisor at CERN: David Stickland), Kacper Biłko (2018, supervisor at CERN: Olivier Stein), Artur Wiśniowski (2018), Kamil Nowak (2017), Kamil Paradowski (2017), Paweł Fatyga (2017), Agnieszka Waryś (2017), Przemysław Bańcerowski (2017, Polish Physical Society Award), Rafał Socha (2017), Marcin Mentel (2013, supervisor at JINR: Grzegorz Kamiński), Piotr Pluciński (2013, supervisor at JINR: Grzegorz Kamiński), Bartłomiej Hnatio (2013, supervisor at JINR: Vratislav Chudoba), Józef Kapuściarz (2011), Marek Świerczek & Michał Ociepka (2011), Łukasz Kurzawski (2011), Tomasz Bierca (2009), Marek Prochera (2009), Jacek Mostowicz (2009), Piotr Kamysz (2007), Łukasz Gintowt (2007), Szymon Myalski (2006, Polish Nuclear Society Award), Mariusz Majewski (2006), Marcin Zborek (2006), Rafał Kosturek (2004)

2.3 Reviewing

2.3.1 Ph.D. dissertations

- Piotr Brzeski (2023, University of Wrocław)
- Łukasz G. Gajewski (2022, Warsaw Technical University, Warszawa)
- Michał Łepek (2021, Warsaw Technical University, Warszawa)
- Joanna Linczuk (2021, Warsaw Technical University, Warszawa)
- Rafał Kowalski (2021, Institute of Nuclear Physics, Polish Academy of Sciences, Kraków)
- Jan B. Stępień (2021, Institute of Physical Chemistry, Polish Academy of Sciences, Warszawa)
- Piotr J. Górski (2020, Warsaw Technical University, Warszawa)

2.3.2 M.Sc. thesis

Adrianna Urbańska (2022), Daniel Szetela (2018), Bartosz Głowacki (2016), Mariusz Stefański (2013), Michał Ochman (2013), Michał Czeraszkiewicz (2012), Piotr Domagała (2011), Małgorzata Wiktorowicz (2006), Grzegorz Orłowski & Tomasz Tomczyk (2005), Jakub Czaplicki (2005), Tomasz Prus (2004), Piotr Kubiś (2004), Grzegorz Wąchocki (2004), Janusz Malinowski (2002), Krystian Piękoś (2001)

2.3.3 B.Sc. thesis

Miłosz Trzop (2025), Adam Zagrajek (2022), Krzysztof Łakomy (2022), Mateusz Barnacki (2022), Dariusz Lesiecki (2022), Krzysztof G. Tondera (2022), Joanna Popieluch (2020), Mateusz Seweryn (2019), Piotr Chołody (2019), Artur Kawala (2019), Paula Palcowska (2019), Ernest Jęczmionek (2018), Hanna Walla (2016), Anna Wujek (2016), Maciej Jurkowski (2015), Mateusz Gawron (2015), Szymon Skoneczny (2012)

3 Papers with students

Articles

[SA.1] K. Malarz and D. Tiggemann. "Dynamics in Eigen quasispecies model". *International Journal of Modern Physics C* **9**.3 (1998), 481–490.

[SA.2] K. Malarz, S. Kaczanowska, and K. Kułakowski. "Are forest fires predictable?" *International Journal of Modern Physics C* **13**.8 (2002), 1017–1031.

[SA.3] K. Malarz, J. Czaplicki, B. Kawecka-Magiera, and K. Kułakowski. "Average distance in growing trees". *International Journal of Modern Physics C* **14**.9 (2003), 1201–1206.

[SA.4] J. Karpińska, K. Malarz, and K. Kułakowski. "How pairs of partners emerge in an initially fully connected society". *International Journal of Modern Physics C* **15**.9 (2004), 1227–1233.

[SA.5] K. Malarz, J. Karpińska, A. Kardas, and K. Kułakowski. "Node-node distance distribution for growing networks". *TASK Quarterly* **8**.1 (2004), 115–119.

[SA.6] R. Kosturek and K. Malarz. "New cellular automaton designed to simulate epitaxial films growth". *Physica A* **345**.3-4 (2005), 538–546.

[SA.7] K. Malarz, M. Zborek, and B. Wróbel. "Curie temperatures for the Ising model on Archimedean lattices". *TASK Quarterly* **9**.4 (2005), 475–480.

[SA.8] S. Piec, K. Malarz, and K. Kułakowski. "How to count trees?" *International Journal of Modern Physics C* **16**.10 (2005), 1527–1534.

[SA.9] M. Majewski and K. Malarz. "Square lattice site percolation thresholds for complex neighbourhoods". *Acta Physica Polonica B* **38**.6 (2007), 2191–2199.

[SA.10] K. Malarz, W. Antosiewicz, J. Karpińska, K. Kułakowski, and B. Tadić. "Avalanches in complex spin networks". *Physica A* **373** (2007), 785–795.

[SA.11] A. Mańka, K. Malarz, and K. Kułakowski. "Clusterization, frustration and collectivity in random networks". *International Journal of Modern Physics C* **18**.11 (2007), 1765–1773.

[SA.12] F. W. S. Lima, J. Mostowicz, and K. Malarz. "Critical behaviour of the Ising $S = 1/2$ and $S = 1$ model on $(3, 4, 6, 4)$ and $(3, 3, 3, 3, 6)$ Archimedean lattices". *Communications in Computational Physics* **10**.4 (2011), 912–919.

[SA.13] Ł. Kurzawski and K. Malarz. "Simple cubic random-site percolation thresholds for complex neighbourhoods". *Reports on Mathematical Physics* **70**.2 (2012), 163–169.

[SA.14] A. Kowalska-Styczeń, K. Malarz, and K. Paradowski. "Model of knowledge transfer within an organisation". *JASSS—the Journal of Artificial Societies and Social Simulation* **21**.2 (2018), 3.

[SA.15] K. Paradowski, A. Kowalska-Styczeń, and K. Malarz. "Influence of a range of interaction among agents on efficiency and effectiveness of knowledge transfer within an organisation". *Acta Physica Polonica A* **133**.6 (2018), 1470–1476.

[SA.16] P. Bańcerowski and K. Malarz. "Multi-choice opinion dynamics model based on Latané theory". *The European Physical Journal B* **92**.10 (2019), 219.

[SA.17] M. Kotwica, P. Gronek, and K. Malarz. "Efficient space virtualisation for Hoshen–Kopelman algorithm". *International Journal of Modern Physics C* **30**.8 (2019), 1950055.

[SA.18] Z. Burda, M. Kotwica, and K. Malarz. "Ageing of complex networks". *Physical Review E* **102**.4 (2020), 042302.

[SA.19] S. Biernacki and K. Malarz. "Does social distancing matter for infectious disease propagation? An SEIR model and Gompertz law based cellular automaton". *Entropy* **24**.6 (2022), 832.

[SA.20] M. Dworak and K. Malarz. "Vanishing opinions in Latané model of opinion formation". *Entropy* **25**.1 (2023), 58.

[SA.21] M. J. Krawczyk, M. Libirt, and K. Malarz. "Analysis of scientific cooperation at the international and intercontinental level". *Scientometrics* **129**.8 (2024), 4983–5002.

[SA.22] M. Wołoszyn, T. Masłyk, S. Pająk, and K. Malarz. "Universality of opinions disappearing in sociophysical models of opinion dynamics: From initial multitude of opinions to ultimate consensus". *Chaos* **34**.6 (2024), 063105.

[SA.23] A. P. Ciepłucha, M. Utnicki, M. Wołoszyn, and K. Malarz. "Lower limit of percolation threshold on a square lattice with complex neighborhoods". *Entropy* **27**.4 (2025), 361.

Conference contributions

[SC.1] A. Z. Maksymowicz, K. Malarz, G. Nagel, and M. S. Magdoń. "Structural correlation in growing thin film surfaces". *Proceedings of the High Performance Computing on Hewlett-Packard Systems Conference*. Ed. by M. Bubak and J. Mościński. Academic Computer Center Cyfronet–Kraków, 1997, 227–234.

[SC.2] K. Malarz, T. Sitkowski, A. Górecki, J. Szkutnik, L. Dominguez, and K. Kułakowski. "Magnetism vs. structure of random clusters of atoms". *International Conference on Spectral and Transport Properties of Random Network Models*. Göttingen (DE), 2000.

[SC.3] K. Malarz, S. Kaczanowska, and K. Kułakowski. "Chaotic dynamics of forest fires". *3rd European Interdisciplinary School on Nonlinear Dynamics for System and Signal Analysis*. Warszawa (PL), 2002.

[SC.4] A. Kaczanowski, K. Malarz, and K. Kułakowski. "Hysteresis loop of a nanoscopic magnetic array". *Proceedings of the International Conference Computational Methods in Sciences and Engineering*. Ed. by T. E. Simos. World Scientific, 2003, 258–261.

[SC.5] K. Malarz, J. Karpińska, A. Kardas, and K. Kułakowski. "Node-node distance distribution for growing networks". *37th Congress of Polish Physicists*. Gdańsk (PL), 2003. [SA.5].

[SC.6] P. Kowalczyk, R. Kosturek, and K. Malarz. "Solid-on-solid models of films growth". *Kraków Computer Science Workshop*. Kraków (PL), 2006.

[SC.7] P. Kamysz and K. Malarz. "Hysteresis loops and spins flips avalanches for the Ising model on $Rb_2Cu_{1-x}Co_xF_4$-like lattice". *19th Conference on Computer Physics*. Brussels (BE), 2007.

[SC.8] K. Piś and K. Malarz. "Magnetic hysteresis loops of Ising spin systems with long-range interaction". *4th ΣΦ International Conference in Statistical Physics*. Kolympari (GR), 2008.

[SC.9] K. Piś and K. Malarz. "Magnetic hysteresis loops of Ising spin systems with long-range interaction". *Frontiers in Modern Physics and its Applications*. Kraków (PL), 2009.

[SC.10] Ł. Kurzawski and K. Malarz. "Simple cubic lattice random-site percolation thresholds for complex neighborhoods". *5th ΣΦ International Conference on Statistical Physics*. Larnaca (CY), 2011. [SA.13].

[SC.11] K. Malarz, A. Kowalska-Styczeń, A. Waryś, and K. Kułakowski. "Modelling the effectiveness of working groups using the technique of cellular automata". *43rd Congress of Polish Physicists*. Kielce (PL), 2015.

[SC.12] K. Malarz, K. Paradowski, and A. Kowalska-Styczeń. "Modeling knowledge transfer in organizations by means of cellular automata technique". *44th Congress of Polish Physicists*. Wrocław (PL), 2017.

[SC.13] K. Paradowski, A. Kowalska-Styczeń, and K. Malarz. "Influence of a range of interaction among agents on efficiency of knowledge transfer within an organization". *13th Econophysics Colloquium & 9th Polish Symposium on Physics in Economy and Social Sciences*. Warszawa (PL), 2017. [SA.15].

[SC.14] A. Kowalska-Styczeń, K. Malarz, and K. Paradowski. "Searching for effective and efficient way of knowledge transfer within an organization". *Proceedings of the 10th International Conference on Agents and Artificial Intelligence*. Ed. by A. P. Rocha and J. van den Herik. Scitepress, 2018, 151–158.

[SC.15] P. Bańcerowski and K. Malarz. "Influence of group leader strength on group opinion unanimity". *Conference on Complex Systems*. Singapore (SG), 2019.

[SC.16] M. Dworak and K. Malarz. "Vanishing opinions in the Latané model of opinion formation". *Conference on Complex Systems*. Palma de Mallorca (ES), 2022.

[SC.17] M. J. Krawczyk, M. Libirt, and K. Malarz. "Ranking sequences of continents and countries in affiliations of scientific papers authors". *12th Polish Symposium on Physics in Economy and Social Sciences*. Wrocław (PL), 2023.

[SC.18] M. J. Krawczyk, M. Libirt, and K. Malarz. "Ranking sequences of continents and countries in affiliations of scientific papers authors". *International Conference on Statistical Physics*. Chania (GR), 2023.

[SC.19] M. Wołoszyn, T. Masłyk, S. Pająk, and K. Malarz. "Vanishing opinions in sociophysical models of opinion dynamics". *35th IUPAP Conference on Computational Physics*. Thessaloniki (GR), 2024.