

Karol Kawa

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★ 29 June 1993

Employment

- Oct 2024 – Sept 2026 📖 **PostDoc**, Department of Condensed Matter Theory, Institute of Physics of the Czech Academy of Sciences, Prague, Czechia.
- Oct 2022 – Now (on leave) 📖 **Assistant professor**, Institute of Theoretical Physics, Wrocław University of Science and Technology, Wrocław, Poland.
- Sept 2016 – Aug 2017 📖 **Animator**. Science Museum “Humanitarium”, Wrocław, Poland.

Education

- Oct 2017 – Sept 2022 📖 **Ph.D. in Physics, Wrocław University of Science and Technology**. Thesis title: *Excitation dynamics in a strongly disordered quantum system with long-range couplings*.
- Oct 2015 – Sept 2017 📖 **M.Sc. in Physics, Wrocław University of Science and Technology**. Thesis title: *Exciton diffusion in a quantum dot ensemble*.
- Oct 2012 – Sept 2015 📖 **B.Sc. in Physics, Wrocław University of Science and Technology**. Thesis title: *Phonon modes of nanocrystal semiconductor*.

Research Publications

- 1 K. Kawa and P. Machnikowski, “Exciton diffusion in a quantum dot ensemble,” *Phys. Rev. B*, vol. 109, p. 224 205, 22 Jun. 2024. [🔗 DOI: 10.1103/PhysRevB.109.224205](https://doi.org/10.1103/PhysRevB.109.224205).
- 2 K. Kawa, T. Kuhn, and P. Machnikowski, “Coherence limitations in the optical control of the singlet-triplet qubit in a quantum dot molecule,” *Phys. Rev. B*, vol. 106, p. 125 308, 12 Sep. 2022. [🔗 DOI: 10.1103/PhysRevB.106.125308](https://doi.org/10.1103/PhysRevB.106.125308).
- 3 K. Kawa and P. Machnikowski, “Spread of correlations in strongly disordered lattice systems with long-range coupling,” *Phys. Rev. B*, vol. 105, p. 184 204, 18 May 2022. [🔗 DOI: 10.1103/PhysRevB.105.184204](https://doi.org/10.1103/PhysRevB.105.184204).
- 4 K. Kawa and P. Machnikowski, “Diffusion of excitations and power-law localization in strongly disordered systems with long-range coupling,” *Phys. Rev. B*, vol. 102, p. 174 203, 17 Nov. 2020. [🔗 DOI: 10.1103/PhysRevB.102.174203](https://doi.org/10.1103/PhysRevB.102.174203).
- 5 K. Kawa and P. Machnikowski, “Spin-orbit-induced hole spin relaxation in a quantum dot molecule: The effect of s-p coupling,” *Journal of Physics: Condensed Matter*, vol. 31, no. 35, p. 355 304, Jun. 2019. [🔗 DOI: 10.1088/1361-648x/ab243d](https://doi.org/10.1088/1361-648x/ab243d).




Skills

- Languages 📖 Confident English in speaking, writing, and reading. Native Polish speaker. Elementary Czech, German and Spanish.
- Programming 📖 Python, C++, \LaTeX , GNU/Linux, Unix/macOS
- Graphics 📖 Matplotlib, Gnuplot, Inkscape
- Office Suit 📖 MS Office.

Skills (continued)


Web Dev  HUGO, HTML, CSS.

Grants and internships

- Jan 2024 – Aug 2024  Co-investigator. Wrocław University of Science and Technology, Wrocław, Poland;
Polish National Science Centre (NCN) and the European Union Framework Programme for Research and Innovation Horizon 2020 under the Marie Skłodowska-Curie grant
Grant No. 2021/43/P/ST3/03293 “Nonequilibrium electrons coupled with phonons and collective orders”,
Principal investigator: dr. habil. Yaroslav Pavlyukh.
- Oct 2021 – Jan 2022  Internship.
Institute of Solid State Physics, University of Münster, Münster (Wesfalen, Germany);
Polish National Agency for Academic Exchange (NAWA),
APM Grant No. PPI/APM/2019/1/00085/U/00001,
Supervision by: prof. Tilmann Kuhn.
- Feb 2018 – Feb 2021  Scholarship. Wrocław University of Science and Technology, Wrocław, Poland;
Polish National Science Centre (NCN),
Grant No. 2016/23/G/ST3/04324,
“Spin qubits in artificial molecules”,
Principal investigator: prof. Paweł Machnikowski.

Participation in Conferences and Seminars





International conferences (talks)

- 29 March 2023  DPG Spring Meeting, Drezden (Germany);
K. Kawa and P. Machnikowski, “Exciton diffusion in a quantum dot ensemble”.





Internation conferences (posters)

- 17–23 June 2023  51st International School & Conference on the Physics of Semiconductors “Jaszowiec 2023”, Szczyrk (Poland);
Poster presentation:
K. Kawa and P. Machnikowski, “Exciton Diffusion in an Ensemble of Self-Assembled Semiconductor Quantum Dots”.
- 29 March 2023  DPG Spring Meeting, Dresden (Germany);
Contributed Talk:
K. Kawa and P. Machnikowski, “Exciton diffusion in a quantum dot ensemble”.
- 4–10 June 2022  50th International School & Conference on the Physics of Semiconductors “Jaszowiec 2022”, Szczyrk (Poland);
Poster presentation:
K. Kawa, T. Kuhn and P. Machnikowski, “Coherence limitations in the optical control of the singlet-triplet qubit in a quantum dot molecule”.

Participation in Conferences and Seminars (continued)

- 1–10 Sept 2021  49th International School & Conference on the Physics of Semiconductors “Jaszowiec 2021”, Poland conference held online;
Poster (online) presentation:
K. Kawa and P. Machnikowski, “Spread of Correlations in Highly Disordered System with Long-Range Coupling”
- 14–17 Sept 2020  International Conference on Nonlinear Optics and Excitation Kinetics in Semiconductors NOEKS15, Münster (Westfalen, Germany), conference held online;
Poster (online) presentation:
K. Kawa and P. Machnikowski, “Localization of an exciton in a quantum dot chain coupled by long-range power law coupling $\propto 1/r$ ”.
- 12–14 Feb 2020  6th International Workshop on the Optical Properties of Nanostructures OPON 2020, Warszawa (Poland);
Poster presentation:
K. Kawa and P. Machnikowski, “Spin-Orbit-Induced Hole Spin Relaxation in a Quantum Dot Molecule: the Effect of s-p Coupling”.
- 8–14 June 2019  48th International School & Conference on the Physics of Semiconductor “Jaszowiec 2019”, Szczyrk (Poland);
Poster presentation:
K. Kawa and P. Machnikowski, “Spin-Orbit-Induced Hole Spin Relaxation in a Quantum Dot Molecule: the Effect of s-p Coupling”.

Seminars

- 12 Dec 2024  Condensed Matter Theory Seminar, Department of Condensed Matter Physics, Charles University, Prague (Czechia).
K. Kawa and P. Machnikowski, “Förster resonance energy transfer in quantum dot ensembles”.
- 29 Oct 2024  Seminar of the Department of Condensed Matter Theory, Institute of Physics of the Czech Academy of Sciences, Prague (Czechia).
K. Kawa and P. Machnikowski, Förster resonance energy transfer in spatially sparse two-dimensional ensembles of self-assembled quantum dots.
- 22 June 2022  Seminar *Coherence-Correlations-Complexity*, Department of Theoretical Physics, Wrocław University of Science and Technology, Wrocław (Poland).
K. Kawa, T. Kuhn, and P. Machnikowski, “Decoherence effects during optical control of the singlet-triplet qubit in a semiconductor quantum dot molecule”.
- 14 April 2021  Seminar *Coherence-Correlations-Complexity*, Department of Theoretical Physics, Wrocław University of Science and Technology, Wrocław (Poland).
K. Kawa and P. Machnikowski, “Spread of Correlations in Highly Disordered Lattice System with Long Range Interaction”.