Peter Rakyta
Physicist

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I am an experienced and forward-thinking Senior Research Fellow and Senior Software Engineer with a decade of expertise in quantum computing and high-performance computing (HPC). My work includes developing algorithms for quantum machine learning, creating hardware emulation frameworks, and designing advanced architectural features that support next-generation quantum applications. I bring a strong foundation in physics and software engineering, combined with a proven track record of delivering innovative, high-impact solutions. I am a dependable and collaborative team member with strong communication and problem-solving abilities, known for managing multiple priorities effectively and maintaining a positive, proactive approach. I am eager to take on new challenges and contribute meaningfully to ambitious engineering projects.

Skills

- Research program planning
- Research & development
- Self-motivated professional, Critical thinking
- C++, Python
- Quantum physics
- Organizational skills
- Linux
- Arduino, embedded programming
- FPGA, low latency data-flow programming, VHDL, Verilog
- MATLAB
- Classical Physics
- Communication skills
- CentOS

Work History

Feb 2022 - Current

Assistant Professor

Department of Physics of Complex Systems, Eötvös Loránd University, Budapest, Hungary

Research activities:

- *Simulation of transport processes in condensate matters*
- *Developing algorithm for quantum compilation and quantum machine learning application*
- *Development of quantum computer emulation algorithms in C++ and data flow environment*

teaching activities:

- *Theory of Quantum Computing*
- *programming in C, C++ and python languages*

Apr 2023 – May 2025

Senior Software Engineer, Consultant

Maxeler Technologies , Groq-Mountain View, CA

- *developing quantum computing application for Groq's data-flow architecture*
- *developing exact and non-exact hardware emulation framework, architecture verification*
- *designing new architecture functionalities*

Jan 2022 - Current

Researcher

Quantum Computing and Information Research Group, Wigner Research Centre for Physics, Budapest, Hungary

- Involved in the OpenSuperQPlus project
  - developed quantum compiler

Sep 2020- Feb 2022

Researcher

Department of Physics of Complex Systems, Eötvös Loránd University, Budapest, Hungary

Quantum Information National Laboratory

- Improved and developed numerical algorithms and implemented them for high performance computing
- Coordinated the workflow of the Laboratory of Quantum Computer Emulators
- Collaborated with team members to initiate best practices to achieve

organizational goals.
- Wrote research papers, reports, reviews and summaries.

Apr 2014 - Current

Forensic Specialist

Ministry of Justice, Budapest, Hungary

- Attended and examined scenes of crimes.
- Reconstructed crime scenes to determine relationships among pieces of evidence.
- Served as expert witness in court of law by explaining analysis procedures.

Jan 2017 – Nov 2021

IT Adviser

Digital Success Nonprofit Ltd., Budapest, Hungary

- Planned, developed and implemented strategies to convey information with key decision makers.
- Produced detailed reports outlining key issues and proposed solutions.
- Anticipated responses and prepared clear and articulate answers.

Nov 2020 – Okt 2021

Researcher

Department of Physics of Complex Systems, Eötvös Loránd University, Budapest, Hungary

Quantum Technology National Excellence Program (No.2017-1.2.1-NKP-2017-00001)

- Studied and solved complex problems using scientific computing.
- Developed and analyzed computer models and simulations.
- Assessed and evaluated data using complex calculations and computer modeling.

Okt 2017 – Sep 2020

Postdoctoral Researcher

Department of Physics of Complex Systems, Eötvös Loránd University, Budapest, Hungary

Postdoctoral Programme of the National Research, Development and Innovation Office (10/01/2017-10/31/2020)

- Conducted independent research in solid state physics and development to attain short and long-term objectives.
- Drafted manuscripts and presented findings at major conferences.
- Wrote and published peer-reviewed articles concerning findings and highlighted possible applications for findings.

Mar 2013 – Dec 2019

Teaching Volunteer

Department of Materials Physics, Department of Physics of Complex

Systems, Eötvös Loránd University, Budapest, Hungary

- Advanced courses of classical optics, theory of special relativity, and thermodynamics.
- Established and maintained positive relationships with students to foster environment of support and open communication.
- Graded homework, tests and quizzes to keep accurate track of student performance.
- Supervised 3 BSc and 2 MSc theses.
- Instructed students through lectures, discussions.

Sep 2015 – **Aug 2017**

Postdoctoral Research Fellow

Department of Physics of Complex Systems, Eötvös Loránd University, Budapest, Hungary

MTA Postdoctoral Fellowship Programme

- Published research results in peer-reviewed journals and presented at seminars and meetings.
- Pursued independent and complementary research interests to achieve.

Sep 2013 – **Aug 2015**

Postdoctoral Research Fellow

Department of Theoretical Physics, Budapest University of Technology and Economics, Budapest, Hungary

MTA Postdoctoral Fellowship Programme

- Conducted research guided by faculty supervisor in accordance with institutional and federal guidelines.
- Authored professional scientific papers for publishing in peer-reviewed journals.

Sep 2009 – **Dec 2012**

Software Developer

ElteSoft Ltd., Budapest, Budapest

- Developed software for both desktop and mobile operating systems.
- Participated in software field testing to verify in-situ performance of developed projects.

Education

Sep 2000 – **Jun 2004**

High School Diploma

Selye János High School - Komárno, Slovakia

Sep 2004 – **Jul 2009**

Master of Science: Physics

Eötvös Loránd University - Budapest

Sep 2009 – **Aug 2012**

Ph.D.: Physics of Condensed Matters

PhD School in Physics At The Eötvös Loránd Univers - Budapest

Scientific and Public Databases

GitHub	*rakytap*
MTMT	*10029799*
ORCID	*0000-0002-3506-558X*
Researcher	*J-2851-2018*
Scopus	*19337455000*