

Curriculum Vitae

Dr. Petra Csomós

Personal data

Name: Dr. Petra Csomós

Date and place of birth: 27.02.1980, Budapest, Hungary

Marital status: married, 2 children

Address: Department of Applied Analysis and Computational Mathematics,
Eötvös Loránd University, Pázmány Péter st. 1/C, 1117 Budapest, Hungary

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Education

2008: PhD degree in applied mathematics, “summa cum laude”, Eötvös Loránd University, Hungary

Dissertation: *Theoretical and Numerical Analysis of Operator Splitting Procedures*

Supervisor: Prof. Dr. István Faragó

2003: University diploma (MSc) in Meteorology with distinction, Eötvös Loránd University, Hungary

Thesis: *Theoretical and Numerical Analysis of Operator Splitting Procedures*

2003: University diploma (MSc) in Astronomy with distinction, Eötvös Loránd University, Hungary

Thesis: *Analysis of Co-orbital Dynamical Systems*

Working experience

Since 01.09.2015: assistant professor, Department of Applied Analysis and Computational Mathematics,
Eötvös Loránd University, Hungary

01.09.2021 – 30.06.2021: guest researcher, Alfréd Rényi Institute of Mathematics, Hungary

01.12.2016 – 30.11.2019: postdoctoral research fellow, National Research, Development and Innovation Of-
fice, Hungary

01.09.2015 – 30.11.2016: research fellow, MTA-ELTE Numerical Analysis and Large Networks Research
Group, Hungarian Academy of Sciences, Hungary

01.09.2013 – 31.08.2015: postdoctoral research fellow, MTA-ELTE Numerical Analysis and Large Networks
Research Group, Hungarian Academy of Sciences, Hungary

10.01.2011 – 31.08.2013: university assistant/postdoc, Leopold Franzens University of Innsbruck, Austria

08.02.2009 – 09.01.2011: maternity leave

01.04.2008 – 07.02.2009: research assistant, Technical University Darmstadt, Germany

16.04.2007 – 31.03.2008: meteorological developer, Hungarian Meteorological Service, Hungary

Awards and prizes

2020: Gyires Béla Prize, Hungarian Academy of Sciences, Section of Mathematics

2018: Bolyai János Research Scholarship, Hungarian Academy of Sciences

2014: Young Researcher Award in Applied Mathematics, The Visegrad Group of Academies

2009: Farkas Gyula Prize, János Bolyai Mathematical Society, Hungary

2003: Prominent Student’s Award, Faculty of Science, Eötvös Loránd University, Hungary

2003: First prize, Students’ Scholarly Circle, Hungary

2002: Special prize, Students’ Scholarly Circle, Hungary

Bilateral projects

- 01.2019–12.2021 (prolonged to 12.2022): Principal Co-Investigator, *Coupled Systems and Innovative Time Integrators* (308019), German Academic Exchange Service (DAAD) and Tempus Public Foundation (Hungary), project-based research exchange program with Prof. Dr. Bálint Farkas (Wuppertal, Germany)
- 09.2014–08.2015: Co-Principal Investigator, *Controllability of linearised shallow water equations* (89öu11), Foundation “Action Austria-Hungary” with Dr. Hermann Mena (Innsbruck, Austria)

Scholarships, fellowships

- 09.2020–06.2021: New National Excellence Program of the Ministry of Human Capacities, Hungary (ÚNKP-20-5-ELTE-860)
- 09.2019–06.2020: New National Excellence Program of the Ministry of Human Capacities, Hungary (ÚNKP-19-4-ELTE-517)
- 09.2018–06.2019: New National Excellence Program of the Ministry of Human Capacities, Hungary (ÚNKP-18-4-ELTE-444)
- 09.2018–08.2021: Bolyai János Research Fellow of the Hungarian Academy of Sciences
- 12.2016–11.2019: Principal Investigator, *Analysis and application of innovative integrators*, National Research, Development and Innovation Office, Hungary (MAT-PD-121117)
- 11–12.2007: 6 weeks visit, Météo-France, Toulouse, France
- 10.2006–02.2007: 5 months Erasmus grant, Department of Mathematics, University of Tübingen, Germany
- 02–04.2006: 3 months visit, Department of Mathematics, University of Tübingen, Germany, talk on *Splitting procedures for delay equations*
- 10.2005–01.2006: 4 months DAAD research grant, Department of Mathematics, University of Tübingen, Germany, talk on *Strongly continuous semigroups for operator splitting procedures*
- 02–03.2002: 1 month visit, Sofia, Bulgaria, talk on *Operator splitting procedures*

Conference attendance

- 02.07.2021: “3rd Bergen–Budapest Workshop on Qualitative and Numerical Aspects of Mathematical Modelling”, online, talk on *Operator splitting for dynamic boundary problems*
- 17–19.06.2021: “Developments in Computer Science”, online, talk on *In search of an appropriate cost function for differential equations’ initial value problems*
- 05–09.04.2021: “International Conference on One-Parameter Semigroups of Operators”, online, talk on *Operator splitting for dynamic boundary problems*
- 24–27.02.2020: “COST Action Mat-Dyn-Net WG Meeting”, Zagreb, Croatia, talks on *Operator Splitting Methods and Magnus-type integrator for delay equations with an application to epidemic models*
- 19–22.12.2019: “Operator Theory and Krein Spaces”, Vienna, Austria, talk on *Trotter–Kato Product Formula in Viewpoint of Numerical Analysis*
- 17–19.06.2019: “Women in Operator Theory and its Applications”, Lisbon, Portugal, talk on *Operator Semigroups for Numerical Analysis* (invited talk)
- 27–29.05.2019: “2nd Bergen–Budapest Workshop on Qualitative and Numerical Aspects of Mathematical Modelling”, Bergen, Norway, talk on *Operator Splitting: From Theory to Application* (invited talk)
- 29.04.2019: “Young researchers’ mini-symposium”, Alfréd Rényi Institute of Mathematics, Budapest, talk on *Innovative Time Integrators and Their Application*
- 18–22.02.2019: “90 th GAMM Annual Meeting”, Vienna, Austria, talk on *Efficient numerical methods for solving optimal control problems*
- 03–07.09.2018: “European Women in Mathematics General Meeting 2018”, Graz, Austria, talk on *Operator semigroups for innovative time integrators*

- 18–22.06.2018: “The 20th European Conference on Mathematics for Industry”, Budapest, Hungary, talk on *Flood prevention with mathematics*
- 11–16.06.2018: “Seventh Conference on Finite Difference Methods: Theory and Applications”, Lozenetz, Bulgaria, talk on *Innovative integrators for optimal control of shallow water equations*
- 20.04.2017: Farkas Miklós Seminar, Budapest University of Technology and Economics, talk on *Innovative integrators*
- 15–22.06.2016: Sixth Conference on Numerical Analysis and Applications, Lozenetz, Bulgaria, talk on *Optimal control for shallow water equations*
- 01–04.07.2015: 10th Colloquium on the Qualitative Theory of Differential Equations, Szeged, Hungary, talk on *Numerical stability for nonlinear evolution equations*
- 15–17.05.2015: Workshop of the GAMM Activity Group “Applied Operator Theory”, Budapest, Hungary, talk on *Exponential integrators for hyperbolic problems*, poster on *Numerical stability of nonlinear evolution equations*
- 14–17.10.2014: “8th NAI Workshop on Numerical Analysis of Evolution Equations”, Innsbruck, Austria, talk on *Numerical stability for nonlinear evolution equations*
- 16–22.03.2014: Oberwolfach Workshop “Nonlinear Evolution Equations: Analysis and Numerics”, Oberwolfach, Germany, short talk on *Exponential integrators for (a very few) hyperbolic problems*
- 21–24.05.2013: Conference “Encounters Between Discrete and Continuous Mathematics, Workshop on Dynamical Networks, Numerical Analysis and Ergodic Theory”, Budapest, Hungary, talk on *Exponential integrators for shallow water equations*
- 11–13.04.2013: Conference “9th Austrian Numerical Analysis Day”, Graz, Austria, talk on *Exponential integrators for shallow water equations*
- 13–15.02.2013: Seminar, Bad Herrenalb, Germany, talk on *Exponential integrators for shallow water equations*
- 10–14.09.2012: Conference “Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF-13)”, Halle (Saale), Germany, talk on *Efficient time integrators for shallow water equations*
- 12–14.07.2012: “Yes, we can! Workshop on female perspectives in mathematical research”, Tübingen, Germany, talk on *Semigroups are everywhere– even in weather forecasts*
- 13–16.05.2012: “7th Workshop on Innovative Integrators”, Innsbruck, Austria, talk on *Operator splitting for delay equations*
- 05–06.05.2011: “7th Austrian Numerical Analysis Day”, Klagenfurt, Austria, talk on *Operator splitting with spatial-temporal discretisations*
- 08–12.04.2008: Workshop “Encounters between discrete and continuous mathematics”, Blaubeuren, Germany
- 22–27.03.2007: “Budapest–Tübingen Workshop on Evolution Equations”, Dobogókő, Hungary, talk on *Theoretical and numerical analysis of operator splitting procedures*
- 06–10.06.2005: “5th International Conference on Large-Scale Scientific Computations”, Sozopol, Bulgaria, talk on *Operator splitting procedures for air pollution transport models*
- 02.05.2005: Hungarian Academy of Sciences, Budapest, Hungary, talk on *Analytical solutions and numerical experiments of operator splitting procedures*
- 08–20.09.2003: NATO ASI “Chaotic Worlds“ (Poster), Cortina D’Ampezzo, Italy
- 15–19.07.2002: “IX. International Conference on Numerical Mathematics and Computational Mechanics”, Miskolc, Hungary

Scientific activities, short-time visits

- 21.10.2019: seminar talk on *Analysis of a switched system*, Department of Applied Analysis and Computational Mathematics, Eötvös Loránd University, Budapest
- 06.05.2019: seminar talk on *Application of operator splitting methods in turbulent models*, Department of Applied Analysis and Computational Mathematics, Eötvös Loránd University, Budapest
- 03.11.2016: short-time visit, Department of Mathematics, University of Tübingen, Germany, talk on *Innovative integrators for optimal control problems*
- 02.12.2013: short-time visit, Visualisation Research Centre, University of Stuttgart, Germany, talk on *Exponential integrators*
- 03.07.2014: short-time visit, Faculty of Mathematics und Natural Sciences, Bergische University Wuppertal, Germany, talk on *Numerical stability for nonlinear evolution equations*
- 10.05.2013: short-time visit, Faculty of Mathematics und Natural Sciences, Bergische University Wuppertal, Germany, talk on *Exponential integrators for shallow water equations*
- 24–30.03.2013: visit, Institute of Mathematics, Eötvös Loránd University, Budapest, Hungary, talk on *Exponential integrators for shallow water equations*
- 16–19.12.2012: visit, Department of Mathematics, University of Tübingen, Germany, tal on *Exponential integrators for shallow water equations*
- 11–20.10.2012: visit, Institute of Mathematics, Eötvös Loránd University, Budapest, Hungary, talk on *Operator splitting procedures*
- 24–29.06.2012: Summer School “Exponential Integrators and Numerical Methods for Multiscale PDEs”, Dobbiaco, Italy
- 19–30.10.2011: visit, Institute of Mathematics, Eötvös Loránd University, Budapest, Hungary, talk on *Stability and convergence of product formulas for operator matrices*
- 27–28.10.2010: short-timevisit, Department of Mathematics, University of Innsbruck, Austria, talk on *Numerical treatment of nonautonomous delay equations applying operator splitting*
- 15.01.2008: short-timevisit, Department of Mathematics, Technical University Darmstadt, Germany, talk on *Theoretical and numerical analysis of operator splitting procedures*
- 08–22.08.2007: visit, Department of Mathematics, University of Tübingen, Germany, talk on *Application of Ensemble Transform Kálmán Filter in meteorological data assimilation*
- 14–21.03.2006: visit, Institute of Mathematics, University Cadi Ayyad, Marrakesh, Morocco, talk on *Sequential splitting for delay equations*
- 24–31.05.2005: visit, National Environmental Research Institute, Roskilde, Denmark
- 31.10–06.11.2004: visit, Department of Mathematics, University of Tübingen, Germany
- 23.08–17.09.2004: Summer School “Computational Fluid Mechanics”, Helmholtz-Institut, Potsdam, Germany
- 04–24.07.2004: Summer School SMI “Evolution Equations and Applications”, Cortona, Italy
- 19–25.06.2004: visit, Department of Mathematics, University of Tübingen, Germany
- 2003/2004: TULKA Internet Seminar “Operator Semigroups and Applications”, Blaubeuren, Germany, talk on *Elliptic Operators and Analytic Semigroups in L^p*
- 11–25.08.2002: “Jyväskylä Summer School”, University of Jyväskylä, Finland

Participation in workshop organisation

- 18–22.06.2018: “The 20th European Conference on Mathematics for Industry”, Minisymposium *Differential Equations in Numerical Modelling: From Theory to Application*, Budapest, Hungary
- 11–16.06.2018: “Seventh Conference on Finite Difference Methods: Theory and Applications”, Special Session *Numerical Methods for Propagation Processes*, Lozenetz, Bulgaria

- 26–27.05.2014: “Mathematical Problems in Meteorological Modelling”, European Consortium for Mathematics in Industry, Budapest, Hungary
- 03–09.07.2012: Final Workshop of the 15th Internet Seminar on “Operator Semigroups for Numerical Analysis”, Blaubeuren, Germany
- 13–16.05.2012: “7th Workshop on Innovative Integrators”, Innsbruck, Austria

Teaching experience

- Eötvös Loránd University, Hungary:
- 2020, 2021: Lectures and practical lessons in *Partial differential equations* for MSc students in mathematics (English course)
- 2020, 2021: Practical lessons in *Partial differential equations* for BSc students in Earth
- 2020: Practical lessons in *Numerical analysis 2* for BSc students in mathematics
- 2020, 2021: Practical lessons in *Mathematics 2* for BSc students in geology
- 2014, 2016, 2019: Lectures in *Operator semigroups for numerical analysis* for PhD students in applied mathematics
- 2018–2020: Lectures in *Mathematics 3 (Differential equations)* for BSc students in Earth and environmental sciences
- 2017: Lectures in *Innovative integrators* for PhD students in applied mathematics
- 2016–2020: Lectures in *Mathematics 1* for BSc students in Earth and environmental sciences
- 2015–2020: Practical lessons in *Scientific modelling* for MA and BSc students in mathematics
- 2015–2016: Lectures and practical lessons in *Mathematics 1-2* for BSc students in Earth and environmental sciences
- 2014–2016: Practical lessons in *Differential equations* for BSc students in Earth and environmental sciences
- 2014: Practical lessons in *Scientific modelling* for MSc students in applied mathematics and meteorology
- 2001–2005: Practical lessons in *Analysis 1–4* for students in meteorology, geophysics and physics-engineering
- University of Innsbruck, Austria:
- 2011–2013: Lectures in *Numerical mathematics* for BSc students in mathematics, MSc students in physics, and in PhD programme “Computational Interdisciplinary Modelling”
- Technical University Darmstadt, Germany:
- 2008: Practical lessons in *Mathematics 2–3*
- University of Tübingen, Germany:
- 2006–2007: Practical lessons in *Functional analysis*

Supervision

- Since 2016: Supervision of 13 BSc theses in Mathematical analyst, Eötvös Loránd University, Hungary
- Since 2016: Supervision of 3 BSc theses in Applied mathematics, Eötvös Loránd University, Hungary
- 2017–2019: Co-supervision of a PhD student in Applied mathematics, Eötvös Loránd University, Hungary
- 2015: Co-supervisor, Student’s Scholarly Circle, Eötvös Loránd University, Hungary (second prize)
- 2013: Supervision of BSc thesis in Mathematics, University of Innsbruck, Austria

Public outreach

- 18.11.2020: ELTEfeszt, Open day at Eötvös Loránd Univ., online video
- 01.17.2020: Open day at the Institute of Mathematics, Eötvös Loránd Univ., talk together with Á. Besenyei
- 02.12.2019: Career orientation theme day, Arany János Grammar School, Budapest, talk
- 11.10.2019: ELTEfeszt, Open day at Eötvös Loránd Univ., talk
- 19.01.2019: Open day at the Faculty of Science, Eötvös Loránd Univ., talk

- 29.09.2017: Researchers' Night, Eötvös Loránd University, talk together with Á. Besenyei
02.12.2016: Open day at the Institute of Mathematics, Eötvös Loránd Univ., talk together with Á. Besenyei
30.09.2016: Researchers' Night, Eötvös Loránd Univ., talk together with Á. Besenyei
02.12.2015: Open day at the Institute of Mathematics, Eötvös Loránd Univ., talk together with Á. Besenyei

Miscellaneous

- Since 10.2019: Management Committee member, COST Action CA18232 *Mathematical models for interacting dynamics on networks*
Since 10.2019: Vice-Leader of Working Group *Numerical methods and applications*, COST Action CA18232 *Mathematical models for interacting dynamics on networks*
2016: Co-Editor, A. Bátkai, P. Csomós, I. Faragó, A. Horányi, G. Szépszó (eds.): *Mathematical Problems in Meteorological Modelling*, Mathematics in Industry, Springer Verlag
10.2011–07.2012: “Virtual Lecturer” at 15th TULKA Internet Seminar 2011/2012 *Operator Semigroups for Numerical Analysis* with A. Bátkai, B. Farkas, and A. Ostermann
Reviewing activities: SIAM Journal on Numerical Analysis, IMA Journal of Numerical Analysis, Computers and Mathematics with Applications, Efficient Numerical Methods for Scientific Applications, International Journal of Computer Mathematics, Central European Journal of Mathematics, Journal of Computational and Applied Mathematics, Electronic Journal of Qualitative Theory of Differential Equations, Publications of the Research Institute for Mathematical Sciences Kyoto University

Language skills

Hungarian: mother tongue, English: fluent, German: fluent

Budapest, 22.08.2021