

Pavel Jiránek

Curriculum Vitae (updated on March 26, 2010)

1 Contact information

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2 Education

10/1998 – 06/2003 M.Sc. (Ing. Degree) in Science Engineering (Electrotechnics and Informatics), Faculty of Mechatronics, Technical University of Liberec, Advisor: Jan Šembera.
07/2003 – 01/2009 Ph.D. in Science Engineering (Electrotechnics and Informatics), Faculty of Mechatronics, Technical University of Liberec, Thesis: Limiting Accuracy of Iterative Methods, Advisor: Miroslav Rozložník, Defence: January 29, 2008.

3 Employment

07/2003 – 01/2008 Technical University of Liberec, Ph.D. student
01/2004 – present Technical University of Liberec, assistant/lecturer
01/2007 – 01/2008 Institute of Computer Science, Academy of Sciences of the Czech Republic, Ph.D. student
02/2008 – present Institute of Computer Science, Academy of Sciences of the Czech Republic, postdoctoral research fellow
11/2008 – present CERFACS, Toulouse, postdoctoral research fellow

4 Projects

GACR 201/09/P464 *Development and analysis of iterative methods for solving large-scale systems of linear algebraic equations in applications*, 2009–2011.

Participation on projects:

GACR 1ET400300415 *Modelling and simulation of complex technical problems*, 2005–2008 (Z. Strakoš)

GA AV CR M100300902 *Preconditioning and iterative solution of saddle-point problems* 2009–2011 (M. Tůma)

MSMT 1M0554 *Advanced remedial technologies*, 2004–2009 (J. Maryška)

5 Teaching

Elasticity, Technical University of Liberec, 2003–2005.

Fluid Mechanics, Technical University of Liberec, 2003–2005.

Introduction to Linear Algebra, Technical University of Liberec, 2005–2008.

Applications of Computed Modeling, Technical University of Liberec, 2005–2006.
Mathematics 2A (Linear Algebra), Technical University of Liberec, 2006–2007.
Operational Research, Technical University of Liberec, 2006–2008.
Applied Mathematics, Technical University of Liberec, 2006–2007.

6 Recent collaborators

Martin H. Gutknecht, Miroslav Rozložník, Zdeněk Strakoš, David Tittley-Peloquin, Martin Vohralík.

7 Publications

7.1 Journal papers and technical reports

- [1] Pavel Jiránek and Miroslav Rozložník. Limiting accuracy of segregated solution methods for nonsymmetric saddle point problems. *J. Comput. Appl. Math.*, 215(1):28–37, May 2008. [doi:10.1016/j.cam.2007.03.021](https://doi.org/10.1016/j.cam.2007.03.021).
- [2] Pavel Jiránek and Miroslav Rozložník. [Maximum attainable accuracy of inexact saddle point solvers](#). *SIAM J. Matrix Anal. Appl.*, 29(4):1297–1321, January 2008. [doi:10.1137/060659727](https://doi.org/10.1137/060659727).
- [3] Pavel Jiránek, Miroslav Rozložník, and Martin H. Gutknecht. [How to make Simpler GMRES and GCR more stable](#). *SIAM J. Matrix Anal. Appl.*, 30(4):1483–1499, December 2008. [doi:10.1137/070707373](https://doi.org/10.1137/070707373).
- [4] Pavel Jiránek and David Tittley-Peloquin. [Estimating the backward error in LSQR](#). Technical Report TR/PA/09/77, CERFACS, Toulouse, 2009.
- [5] Pavel Jiránek and Miroslav Rozložník. [Adaptive version of Simpler GMRES](#). *Numer. Algorithms*, 53(1):93–112, January 2010. Technical Report TR/PA/08/101, CERFACS, Toulouse, 2008. [doi:10.1007/s11075-009-9311-2](https://doi.org/10.1007/s11075-009-9311-2).
- [6] Pavel Jiránek, Zdeněk Strakoš, and Martin Vohralík. [A posteriori error estimates including algebraic error and stopping criteria for iterative solvers](#). Submitted for publication to *SIAM J. Sci. Comput.*, 2010.

7.2 Conference proceedings

- [7] Pavel Jiránek. Numerical model of diffusion of species in an internal combustion engine. In *Proceedings of Student EEICT 2003*, pages 216–220, Brno, 2003.
- [8] Pavel Jiránek and Jan Šembera. FVM model of advection-diffusion mass transport with respect to numerical diffusion. In *Proceedings of SIMONA 2003*, pages 47–56, Liberec, 2003. Technical University of Liberec.
- [9] Pavel Jiránek, Jiří Maryška, and Jan Šembera. Model of compressible flow and transport in a time-dependent domain. In M. Feistauer et al., editor, *Numerical Mathematics and Advanced Applications, Proceedings of ENUMATH 2003*, pages 521–530. Springer, 2004.
- [10] Pavel Jiránek. On a maximum attainable accuracy of some segregated techniques for saddle point problems. In *Proceedings of the XI. PhD. Conference*, pages 26–34, Prague, 2006. Institute of Computer Science, Academy of Sciences of the Czech Republic, Matfyzpress.

- [11] Pavel Jiránek and Miroslav Rozložník. On a limiting accuracy of segregated techniques for saddle point problems. In *Proceedings of SIMONA 2006*, pages 62–69, Liberec, 2006. Technical University of Liberec.
- [12] Pavel Jiránek, Zdeněk Strakoš, and Martin Vohralík. On a posteriori error estimates in the finite volume method including the algebraic error: a diffusion model problem. In *Proceedings of Seminar on Numerical Analysis and Winter School SNA'08*, pages 73–74, Liberec, 2008. Technical University of Liberec.
- [13] Pavel Jiránek and Miroslav Rozložník. On a stable variant of Simpler GMRES. In *Proceedings of Seminar on Numerical Analysis and Winter School SNA'09*, pages 55–59, Ostrava, 2009. Institute of Geonics, Academy of Sciences of the Czech Republic.

7.3 Other publications

- [14] Pavel Jiránek. *Limiting Accuracy of Iterative Methods*. PhD thesis, Technical University of Liberec, Institute of Computer Science, Academy of Sciences of the Czech Republic, 2007.

8 Talks and presentations

- The XI. PhD. Conference, Institute of Computer Science, Academy of Sciences of the Czech Republic, Monínec Sedlec-Prčice, Czech Republic, September 21, 2006, *On a maximum attainable accuracy of some segregated techniques for saddle point problems*, joint work with M. Rozložník, contributed talk.
- Simulation, Modelling, and Numerical Analysis SIMONA 2006, Technical University of Liberec, Liberec, Czech Republic, September 18–20, 2006, *Attainable accuracy of segregated methods for saddle point systems*, joint work with M. Rozložník, contributed talk.
- Seminar on Numerical Analysis and Winter School SNA'07, Institute of Geonics, Academy of Sciences of the Czech Republic, Ostrava, Czech Republic, January 22–26, 2007, *Attainable accuracy of segregated methods for saddle point systems*, joint work with M. Rozložník, contributed talk.
- MAT-TRIAD'07, Bedlewo, Poland, March 22–24, 2007, *On the limiting accuracy of segregated saddle point solvers*, joint work with M. Rozložník, contributed talk.
- CEMRACS'07, Luminy, France, June 22 – August 31, 2007, *On the stability of Simpler GMRES*, joint work with M. Rozložník, M. H. Gutknecht, seminar of the summer school.
- IMA Conference on Numerical Linear Algebra and Optimization, Birmingham, UK, September 13–15, 2007, *How to make Simpler GMRES more stable*, joint work with M. Rozložník and M. H. Gutknecht, contributed talk.
- Seminar on Numerical Analysis and Winter School SNA'08, Technical University of Liberec, Liberec, Czech Republic, January 28 – February 1, 2008, *On a posteriori error estimates in the finite volume method including the algebraic error: a diffusion model example*, joint work with Z. Strakoš and M. Vohralík, contributed talk.
- 9th IMACS International Symposium on Iterative Methods in Scientific Computing, Lille, France, March 17–20, 2008, *On the numerical stability of Simpler GMRES and GCR*, joint work with M. Rozložník and M. H. Gutknecht, contributed talk.

- Applied Linear Algebra – in honor of Ivo Marek, Novi Sad, Serbia, April 28–30, 2008, *A posteriori error estimates including the algebraic error: a diffusion model example*, joint work with Z. Strakoš and M. Vohralík, contributed talk.
- 5th International Workshop on Parallel Matrix Algorithms and Applications PMAA'08, Neuchâtel, Switzerland, June 20–22, 2008, *On the numerical stability of Simpler GMRES and GCR*, minisymposium talk.
- CERFACS, Toulouse, France, July 31, 2008, *Numerical behavior of Simpler GMRES and GCR*, joint work with M. Rozložník and M. H. Gutknecht, Parallel Algorithms Group seminar.
- Seminar on Numerical Analysis and Winter School SNA'09, Institute of Geonics, Academy of Sciences of the Czech Republic, Ostrava, Czech Republic, February 2–6, 2009, *On a stable variant of Simpler GMRES and GCR*, joint work with M. Rozložník and M. H. Gutknecht, contributed talk.
- Winter school “New trends in scientific computing”, CIRM, Marseille, France, February 9–13, 2009, *A posteriori error estimates and stopping criteria for iterative solvers*, joint work with Z. Strakoš and M. Vohralík, poster.
- Sparse Days 2009, CERFACS, Toulouse, France, June 18–19, 2009, *Stable variant of Simpler GMRES and GCR*, joint work with M. Rozložník and M. H. Gutknecht, contributed talk.
- The 4th IMACS Conference on Mathematical Modelling and Computational Methods in Applied Sciences and Engineering “Modelling 2009”, Rožnov pod Radhoštěm, Czech Republic, June 22–26, 2009, *A posteriori error estimates and stopping criteria for iterative solvers*, joint work with Z. Strakoš and M. Vohralík, contributed talk.
- ENUMATH 2009, Uppsala, Sweden, June 29–July 03, 2009, *A posteriori error estimates and stopping criteria for iterative solvers*, joint work with Z. Strakoš and M. Vohralík, contributed talk.
- SIAM Conference on Applied Linear Algebra, Monterey Bay-Seaside, California, October 26–29, 2009, *On a stable variant of Simpler GMRES and GCR*, joint work with M. Rozložník and M. H. Gutknecht, contributed talk.
- Seminar on Numerical Analysis and Winter School SNA'10, Nové Hradky, Czech Republic, January 18 – 22, 2010, *A posteriori error estimates and stopping criteria for iterative solvers*, joint work with Z. Strakoš and M. Vohralík, winter school talk.