CURRICULUM VITAE

Personal data:

Name:	Maya Gueorguieva Neytcheva
Present address:	Department of Information Technology Uppsala University Box 337, SE-751 05 Uppsala, Sweden e-mail: Maya.Neytcheva@it.uu.se tel.: +46-18-471 2979

Educational/Scientific track record:

Secondary school:	Varna Mathematical High School, Bulgaria, graduated 1974 with a first class honour diploma (cum laude);
University degree:	M.Sc. in Mathematics (Mathematical modelling)- Faculty of Mathematics, Sofia University, Bulgaria, graduated 1979 (cum laude diploma and a golden medal).
Ph.D. degree:	Ph.D. student in Mathematics (Numerical Analysis), Faculty of Mathematics and Informatics, University of Nijmegen, The Netherlands; started October 1991, finished October 1995. Thesis title: *Arithmetic and computational complexity of preconditioning methods*, Advisor: Prof. Dr. A.O.H. Axelsson.
Docent in HPC	September 27, 2005, Uppsala University, Sweden
Professor of HPC	January 26, 2016, Uppsala University, Sweden

Special awards: Golden Medal from Sofia University (1979) - a distinction given to students with only maximal grades
I.B.M. Frye award, given to promising female Ph.D. students at the University of Nijmegen (1994).

Professional experience:

1979 - 1986	Research Associate at the Institute of Applied Systems Design "SYSTEMISOT", Sofia, Bulgaria;
1986-1991	Research Associate at the Institute of Mathematics, Bulgarian Academy of Sciences, Sofia, Bulgaria;
November 1, 1995 – March 15, 1996	NCF/NWO Fellowship for scientific training activities, entitled *Scalable and optimal iterative solvers for linear and nonlinear problems*;
May 1, 1996 – October 15, 1996	Researcher at the Department of Mathematics, Faculty of Mathematics and Informatics (50%);
March 16, 1996 – February 28, 1998	Post-Doc at NWO, STW Project *High Performance Computing for nonlinear problems in numerical modelling of constructions*, (50%); Project leader: Prof. A.O.H. Axelsson.

Professional experience (cont):

February 1, 1997– July 31, 2001	University lecturer at the Department of Mathematics, Catholic University Nijmegen, The Netherlands.
August, 1, 2001– Dec 31, 2010	Deputy Director of the Swedish National Graduate School in Mathematics and Computing (FMB),Uppsala, Sweden
August, 1, 2001–	Senior lecturer (associate professor), now professor at the Department of Information Technology, Uppsala University, Sweden
Languages:	English (fluently), Russian (fluently), Dutch (used in teaching), Swedish (used in teaching), Bulgarian (mother language)

Areas of interest and specialization:

Numerical Analysis:	Iterative methods for solving discretized partial differential equations - elliptic and parabolic (time-dependent) PDEs, convection-diffusion problems, Stokes and Navier-Stokes problems and indefinite systems; linear elasticity and visco-elasticity, Helmholtz equations Robust preconditioners. Parallelization of iterative solution methods.
Computer Science:	- Parallel architectures and parallel aspects of numerical algorithms; - Information systems; Data bases.
Teaching process:	Computer aided teaching in numerical methods.

Special qualifications and relevant experience in computers and Informatics:

Programming languages and systems:	MATLAB, FORTRAN (77, 90, CM-FORTRAN, CRAFT, HPF), MAPLE, MPI, OpenMP, BSP, PL/1, MUMPS
Operating Systems:	Unix, Linux, Windows, OS/VS2 MVS (TSO), MUMPS, VM-CMS, MS DOS - IBM PC
Computers:	experience on: IBM Mainframes and PDP-11 (as a programmer and a system programmer); workstations and symmetric multiprocessors (SMP) (as a programmer); massively parallel computers: CM-2/200/5 and MPP Cray-T3D/T3E, parallel clusters (as a programmer)

Teaching experience:

Part-time lecturer at the Center for Computer Training "ISOTSERVICE" and the National Educational Center, Sofia, Bulgaria
Lecturer for the following courses (given at):
Practical Linear Algebra (Univ. Nijmegen), Finite Difference Methods (Univ. Nijmegen), Supercomputers and Numerical Linear Algebra (Univ. Nijmegen), Numerical Methods in Natural Sciences (Univ. Nijmegen), Algorithms for Parallel Computers (Uppsala Univ.), Analysis of Numerical Algorithms (Uppsala Univ.), Scientific Computing I.II (Uppsala Univ.), Numerical solution methods for nonlinear problems (Uppsala Univ.), Numerical Linear Algebra (Uppsala Univ.), Computational Methods for Statistics with Applications (Uppsala Univ.), Numerical methods in Scientific Computing (Uppsala Univ.), Parallel and Distributed Programming (Uppsala Univ.)

Invited lecturer:

2018	Invited speaker at the *The Thirteenth International Conference on Matrix Theory and Applications* Harbin Engineering University, Harbin, China, August 17-22
2013	Invited speaker at *Preconditioning of Iterative Methods: Theory and Applications (PIM)*, Prague, Czech Republic, July 2-5
2012	Invited speaker at the *Fourth International Conference on Numerical Algebra and Scientific Computing (NASC12)*
2010	Invited speaker at the *Nineteenth International Workshop on Matrices and Statistics*, Shanghai, China, from June 5 to June 8
2008	Invited speaker at the *Second International Conference on Numerical Algebra and Scientific Computing (NASC08)*, Nanjing Normal University, Nanjing, China, November 2-5
2008	Course on *Parallel algorithms, programming in MPI* January 14-18, 2008, Institute of Informatics and Mathematical Modelling, The Technical University of Denmark, Lyngby, Denmark.
2000	Course on *Scientific Computing: Parallel algorithms* Institute of Informatics and Mathematical Modelling, The Technical University of Denmark, Lyngby, Denmark, October 2-19
1999	Invited lecturer at the *International Conference on Preconditioning Techniques for Large Sparse Matrix Problems in Industrial Applications (Sparse'99)*, Minneapolis, Minnesota, June 10-12
1994	Course on *Recent advances in Iterative Methods for solving Algebraic Systems and Eigenvalue Problems*, Leuven, Belgium, March 10 O. Axelsson and M. Neytcheva, I: Block diagonal and Schur complement preconditioners. II: The algebraic multilevel iteration method. III: Approximate inverses and their use in preconditioning methods.

Ph.D. students:

Ivo Dravins	*On preconditioners for PDE-constrained optimization*, 2018-2023.
Sven-Erik Ekström	*Matrix-less methods for computing eigenvalues of large structured matrices*, 2016-2018
Ali Dorostkar	*Advances and enhancements in the analysis and implementation of preconditioners for prestressed elasticity problems*, 2012-2017
Petia Boyanova	*On numerical solution methods for block-structured discrete systems*, 2009-2012.
He Xin	*On some numerical methods and solution techniques for incompressible flow problems*, 2008-2012.
Erik Bängtsson	*Robust preconditioners based on the Finite Element framework*, 2002-2007.

Ms.Sci. students:

Andreé Falgin	*Solving PDE-constrained optimization problems with sparse controls*, 2018-
Cesar Ampuero Felix	*The CUT-FEM method for PDE-constrained optimization problems: impact on accuracy and preconditioning*, 2018 - 2018
Anders Ström	*Preconditioned iterative methods for PDE-constrained optimization problems with pointwise state constraints*, 2016 - 2017
Shiraz Farouq	*Performance comparisons of preconditioned iterative methods for problems arising in PDE-constrained optimization*, 2014 - 2015
Christian Karlsson	*Advanced Preconditioners for Adaptive Finite Elements*, 2013 - 2014
Juan Carlos Cabarcas	*Enhanced solution methods for viscoelastic problems*, 2012
Xunxun Wu	*Preconditioners for the discrete Chan-Hilliard equation in three space dimensions*, Jan 2011
Guanwen Ying	*Efficient harmonic simulations of trabecular bone micro finite element models*, 2008-2009
Elisabeth Linnér	*Sparse Approximate Inverses in a Finite Element Framework*, 2008-2009
Niklas Fors	*Enhancing Flexibility in Iterative Solution Methods*, 2006-2007
Shaman Mahmoudi	*Large scale numerical simulations of bone structures*, 2005-2006
Kristoffer Karlström	*Numerical simulations of linear viscoelastic problems*, 2005-2006

Editorial work:

January, 2002	The associate editor of the journal *Numerical Linear Algebra with Applications*, John Wiley & Sons, Ltd.
January, 2007	Member of the Editorial board of the *IAENG International Journal of Applied Mathematics*
January, 2017	Editor for the journal *Electronic Transactions in Numerical Analysis*
Upon request	Reviewer for the journals *SIAM Journal on Scientific Computing*, *IJNME*, *BIT Numerical Mathematics*, *Journal of Computational Physics*, *Journal of Computational and Applied Mathematics*.

Grants: Donation **KAW 2013.0341** from the Knut & Alice Wallenberg Foundation in collaboration with the Royal Swedish Academy of Sciences, supporting Swedish research in mathematics, 2014-2015.

Participation in research projects:

Project sponsored by Swedish Research funding organizations:

Swedish Research Council (VR)	*Mathematics and numerics in PDE-constrained optimization problems with state and control constraints* Duration: 2018-2022, Type of involvement: Project leader
The Swedish Foundation for International Cooperation in Research and Higher Education (STINT)	Initiation Grant 'Large scale complex numerical simulations on large scale complex computer facilities - identifying and overcoming performance, programmability and reliability issues' with the Research and Computing Center of the Moscow State University Duration: 2016-2017, Type of involvement: Project leader

VR — *Finite element preconditioners for algebraic problems as arising in modelling of multiphase microstructures*
Duration: 2009-2011, Type of involvement: Project leader

EU projects:

NESUS — *EU COST Action IC1305 Network for Sustainable Ultrascale Computing*
Duration: Nov 2013 - 2018
Type of involvement: Member of the Management Committee, representing Sweden and STSM coordinator

ComplexHPC — *EU COST Action IC0805 Open European Network for High Performance Computing on Complex Environments*
Type of involvement: Member of the Management Committee, representing Sweden
Duration: May 2010 - June 2013
Type of involvement: Member of the Management Committee, representing Sweden

COPERNICUS — *High Performance Computing in Geosciences; Safety of Constructions with Respect to Rock Deformations and Movements*, CP 94-0820 Hipergeos
Duration: March 1995 - July 1998
Type of involvement: development and implementation (serial and parallel) of preconditioned iterative methods for linear and nonlinear problems in elasticity; administrative and coordinative work.

COPERNICUS - KIT — *High Performance Computing in Geosciences II; Safety of Constructions with Respect to Rock Deformations and Movements*, 977006 Hipergeos II
Duration: September 1998 - August 2001
Type of involvement: development and implementation of preconditioned iterative methods for linear and nonlinear problems in elasticity; administrative and coordinative work.

INTAS — *High performance computing in numerical simulations*, 93-377 EXT
Duration: 1994 - 1999
Type of involvement: research, administrative and coordinative work.

INTAS — *Development of high performance numerical methods for solving stiff multiparameter boundary value problems* RFBR 95-0098
Duration: 1996 - 2000
Type of involvement: research, administrative and coordinative work.

Projects sponsored by the Dutch National Foundation for Computer Resources (NCF):

MP-010 — *Preconditioning methods for extremely large scale scientific models*,target computer: Cray T3E at TU Delft, The Netherlands
Duration: 1997-1998
Type of involvement: development and implementation of parallel Algebraic Multilevel Iteration techniques, administrative work.

MP-003 — *Parallel implementation of the Algebraic Multilevel Iteration Method*, target computer: CM-5 at RUG Groningen, The Netherlands
Duration: 1996-1997

NCF-CRG-95.28 *Scalable and Optimal Iterative Solvers for Linear and Nonlinear Problems*, target computer: Cray T3D, Lausanne, Switzerland
Duration: 1995-1996

Other projects :

Project supported by the Dutch Technology Foundation STW

1998 - 2000 *High performance computing of problems in structural engineering*
Type of involvement: development and study of nearly optimal order preconditioned iterative methods for problems in 2D and 3D linear elasticity based on domain decomposition techniques and computer implementation (including for parallel computer systems).

Projects supported by the Uppsala Multidisciplinary Center for Advanced Computational Science (UPPMAX)

2004 - 2007 *Numerical solution methods for glacial rebound models*
2004 - ongoing *Parallel computing in Geosciences*
Type of involvement: principal coordinator.

Project supported by the Czech Academy of Sciences

2005 - 2007 *Parallel computing in Geosciences*
Partner group, Institute of Geonics of the Czech Academy of Sciences, Ostrava

Organization of conferences/minisymposia/schools:

Sept 30-Oct 4, 2019	ENUMATH 2019
June 10-14, 2019	12th International Conference on *Large-Scale Scientific Computations"*, Sozopol, Bulgaria
Oct 22-26, 2016	6th International Conference on Numerical Algebra and Scientific Computing, Hangzhou, China
June 17-19, 2015	International Conference on Preconditioning Techniques for Scientific and Industrial Applications, Eindhoven, Netherlands
Sept 6-9, 2015	11th International Conference on Parallel and Applied Mathematics, Krakow, Poland
Oct 25-29, 2014	5th International Conference on Numerical Algebra and Scientific Computing, Shanghai, China
Sep 28-Oct 4, 2014	International Conference on Computational Methods in Applied Mathematics, Strobl, Austria
Sept 8-11, 2013	10th International Conference on Parallel and Applied Mathematics, Warsaw, Poland
June 3-6, 2013	Graduate school '*Heterogeneous computing - impact on algorithms*', organized within the EU COST Action IC0805: Open Network for High-Performance Computing on Complex Environments
Oct 20.24, 2012	4th International Conference on Numerical Algebra and Scientific Computing, Dalian, China
June 28-30, 2012	Parallel Matrix Algorithms and Applications, London, UK
June 6-10, 2011	8th International Conference on *Large-Scale Scientific Computations"*, Sozopol, Bulgaria
June 30-July 3, 2010	6th International Workshop on *Parallel Matrix Algorithms and Applications*, University of Basel, Switzerland
June 29-July 3, 2009	ENUMATH 2009

Organization of conferences/minisymposia/schools:

June 4-8, 2009	7th International Conference on *Large-Scale Scientific Computations"*, Sozopol, Bulgaria
June 5-9, 2007	6th International Conference on *Large-Scale Scientific Computations*, Sozopol, Bulgaria
June 6-10, 2005	5th International Conference on *Large-Scale Scientific Computations*, Sozopol, Bulgaria
June 13-17, 2006	15th International Workshop on *Matrices and Statistics*, Uppsala, Sweden
June 4-8, 2003	Fourth International Conference on *Large-Scale Scientific Computations*, Sozopol, Bulgaria
May 20–23, 2001	Conference on *Preconditioned Robust Iterative Solution Methods for Problems with Singularities (PRISM'01)*, Nijmegen, The Netherlands
August 19–23, 1998	4th International Conference on *Numerical Methods and Applications (NM&A $O(h^4)$'98)*, Sofia, Bulgaria
May 27-29, 1997	International Conference on *Preconditioned Iterative Solution Methods for Large Scale Problems in Scientific Computations (PRISM'97)*, Nijmegen, The Netherlands
May 19–26, 1997	Summer school on *Multilevel preconditioning methods with parallel implementation aspects and applications in Scientific Computing*, Nijmegen, The Netherlands
June 13-15, 1996	International Conference on *Algebraic Multilevel Iteration Methods with Applications (AMLI'96)*, Nijmegen, The Netherlands