

# Report on ICIAM 2007 with focus on the health of Applied Linear Algebra (ALA)

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During the week 16–20 July, 2007, the 6th International Congress on Industrial and Applied Mathematics (ICIAM) Meeting took place in Zurich (CH) and it was hosted by the Swiss Mathematical Society. Previous meetings were held in Paris 1987, Washington 1991, Hamburg 1995, Edinburgh 1999, Sydney 2003. ICIAM 2007 also embedded 4 annual meetings, including the GAMM Annual Congress.

The Meeting counted over 3000 registered delegates, an overwhelming figure for those of us more used to the reassuring two-digit number of participants in workshops on Applied Linear Algebra. Nonetheless, I am proud to say that the number of participants and the number of sessions in our field were remarkably relevant. Therefore, the first hard impact was immediately replaced by a positive astonishment. Due to the large number of events, it was possible to glance over the program on the web only by code (for a taste you can check <http://www.iciam07.ch/index>; the full program book provided at registration, without abstracts, was a very thick tome). The code "Numerical Analysis", displayed an impressive list of Applied Linear Algebra related sessions, with always at least two or three ALA sessions in parallel. A short, non-exhaustive list for each day is reported below, just to prove that the desire of ubiquitousness must have pervaded all of us. Two keynote events were the GAMM Richard von Mises Prize Lecture delivered by Tatjana Stykel (TU Berlin, Germany) on "Model reduction of differential-algebraic equations", and the Olga Taussky-Todd Lecture of Pauline van den Driessche (University of Victoria, Canada) on "Matrices in action for epidemic models".

In addition, there were several minisymposia of great interest for people working in ALA, with topics ranging from data assimilation, sparse grids, interval methods, algebraic methods for geometric design, to Geometric and Algebraic Multigrid, Domain Decomposition and general PDE problems. Among the contributed talk sessions spread throughout the week, five of them were explicitly on Numerical Linear Algebra.

In most talks during all sessions of the meeting, Matrix Computations and Matrix properties were a major concern; a truly breath-taking experience. In fact, a striking consideration was to realize, for those who have not done so yet, how large and steadily growing is the variety of applications in which Matrix Computation plays a leading role. This fact clearly emerged during the Round table "Future directions of

numerical analysis" organized by Gene Golub and Nick Trefethen, which took place on Thursday evening, with the contribution of Tony Chan, Martin Gander, Volker Mehrmann, Valeria Simoncini, and Ya-xiang Yuan as panelists.

The impression throughout the whole week was that ALA, in addition to having been so prominently represented, has appeared as one of the most lively and scientifically active communities.

Finally, we enthusiastically foresee even more active involvement of the ALA community into Applied Mathematics and Industrial frameworks, and we hope that there will be an ever growing recognition of ALA in the mathematical world.

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PARALLEL MISYMPOSIA more strictly related to ALA :  
(the first organizer is also listed)

I apologize in advance in case not all relevant minisymposia are listed.

#### MONDAY

Organizer: Prof. Volker Mehrmann (TU Berlin, Germany)

title: Model reduction: theory, methodology and software

Organizer: Prof. Peter Arbenz (ETH Zürich, Switzerland)

title: Large-scale eigenvalue problems

Organizer: Sergei Pereverzyev (RICAM Linz, Austria)

title: Non-standard and problem-oriented regularization methods

#### TUESDAY

Organizer: Prof. Pierre Comon (Université de Nice, France)

title: Numerical multilinear algebra: a new beginning

Organizer: Prof. Eric de Sturler (Virginia Tech, USA)

title: Solution methods for sequences of linear systems and applications

Organizer: Prof. Peter Benner (TU Chemnitz, Germany)

title: Computational methods for structured eigenvalue problems

Organizer: Dr. Andy Wathen (University of Oxford, UK)

title: Iterative solution of saddle–point systems arising in PDE–constrained optimization

## WEDNESDAY

Organizer: Prof. Paulo Vasconcelos (University of Porto, Portugal)

title: Spectral computations for integral operators

Organizer: Dr. Philipp Birken (Universität Kassel, Germany)

title: Preconditioners for sequences of linear systems

## THURSDAY

Organizer: Dr. Brett Bader (Sandia National Laboratories, USA)

title: Tensor decompositions and their application

Organizer: Prof. Olga Holtz (University of California–Berkeley, USA and TU Berlin, Germany)

title: Structured matrix algorithms: complexity and stability

Organizer: Prof. Volker Mehrmann (TU Berlin, Germany)

title: Model reduction in circuit simulation

Organizer: Prof. Valeria Simoncini (Universita' di Bologna, Italy)

title: Matrix functions: methods and applications

## FRIDAY

Organizer: Prof. Matthias Bollhoefer (TU Braunschweig, Germany)

title: Preconditioning of symmetric indefinite systems in large–scale applications

Organizer: Prof. Heinrich Voss (TU Hamburg–Harburg, Germany)

title: Nonlinear eigenvalue problems

Organizer: Dr. Luke Olson (Univ. of Illinois at Urbana–Champaign, USA)

title: Developments in algebraic multigrid methods for real–world applications

Organizer: Prof. James Nagy (Emory University, USA)

title: Numerical linear algebra in image processing

Organizer: Prof. Marko Huhtanen (Helsinki University of Technology, Finland)

title: Mathematical topics in matrix iterations

Organizer: Guido Kanschat (Texas A&M University, USA)

title: Fast solvers for saddle-point problems with applications in fluid dynamics