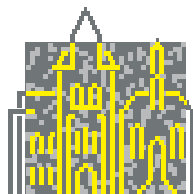


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(Editors)

## **Theoretical and Computational Aspects of Matrix Algorithms**

Dagstuhl Seminar 03421 – October 12 to October 17, 2003  
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## Summary

This seminar attracted forty-six participants from twelve countries. The main theme was matrix algorithms from several perspectives: computer science, information theory, mathematics, engineering, physics, chemistry, statistics, algorithms, software, control, industrial applications. Many attendees praised the diversity of the presentations. The diversity of matrix algorithm topics was one of the recurrent themes repeated over and over by the participants, who said that this made this meeting particularly special. This breadth in the topics of the conference illustrated the richness of the field usually referred as "Computational Linear Algebra". This field includes the solution of systems of linear equations (ubiquitous in many applications in science and engineering), the design and implementation of preconditioners, solution of eigenvalue problems and combinatorial matrix problems.

The participants appreciated the ability to have discussions with people whom they would hardly meet at other conferences. The interaction between people from different areas of work was very fruitful. There were many such examples of people who have known of each others' publications, but at the seminar they had the chance to interact with each other for the first time. Other researchers who did know each other were able to renew their contacts and collaborations.

The Dagstuhl environment added to the group's sense of camaraderie. There was ample time for informal discussions, and people took real advantage of this. It was not unusual to see people working together in the evenings. In fact, it was hard to find a working area not occupied by two or three participants writing on paper at tables, or on whiteboards.

The program of presentations (<http://www.dagstuhl.de/files/Reports/03/03421.pdf>) gives a clear idea of the multiplicity of topics discussed, from wireless communications to Quantum Chemistry. Scientists who work mostly in theoretical aspects of the field contributed ideas to those working in applications areas. At the same time those theoreticians felt inspired by the new problems presented. During and after the talks, there were many questions and discussions. There was a real interaction between speaker and audience.

Overall everyone agreed was that it was a very stimulating meeting.

## Participants

- Bai, Zhaojun (University of California – Davis)
- Benner, Peter (TU Chemnitz)
- Benzi, Michele (Emory University – Atlanta)
- Bhaya, Amit (UFRJ / COPPE)
- Bollhöfer, Matthias (TU Berlin)
- Byers, Ralph (The University of Kansas)
- Calvetti, Daniela (Case Western Reserve University)
- Damm, Tobias (TU Braunschweig)
- de Sturler, Eric (University of Illinois – Urbana)
- Dhillon, Inderjit (University of Texas at Austin)
- Embree, Mark (Rice University – Houston)
- Ernst, Oliver (TU Bergakademie Freiberg)
- Faßbender, Heike (TU Braunschweig)
- Freund, Roland (Bell Labs – Murray Hill)
- Frommer, Andreas (Universität Wuppertal)
- Gander, Martin J. (McGill University – Montreal)
- Gutknecht, Martin H. (ETH Zürich)
- Hayami, Ken (NII – Tokyo)
- Heuveline, Vincent (Universität Heidelberg)
- Higham, Nick (Manchester University)
- Hochbruck, Marlis (Heinrich-Heine Universität)
- Huckle, Thomas (TU München)
- Ipsen, Ilse (North Carolina State University)
- Klawonn, Axel (Universität Duisburg-Essen)
- Lehoucq, Richard (Sandia National Labs – Albuquerque)
- Liesen, Jörg (TU Berlin)
- Matthies, Hermann G. (TU Braunschweig)
- Mehl, Christian (TU Berlin)
- Mehrmann, Volker (TU Berlin)
- Meurant, Gérard (CEA)
- Nabben, Reinhard (Universität Bielefeld)
- O’Leary, Dianne (University of Maryland – College Park)

- Oishi, Shin'ichi (Waseda Univ. / JST – Tokyo)
- Raydan, Marcos (Universidad Central de Venezuela)
- Reichel, Lothar (Kent State University)
- Rixen, Daniel J. (Delft University of Technology)
- Rozložnik, Miro (Academy of Science – Prague)
- Rump, Siegfried M. (TU Hamburg-Harburg)
- Simoncini, Valeria (University of Bologna)
- Steidl, Gabriele (Universität Mannheim)
- Stewart, G. W. (Peter) (University of Maryland – College Park)
- Strakos, Zdenek (Academy of Science – Prague)
- Szyld, Daniel B. (Temple University – Philadelphia)
- Tuma, Miroslav (Academy of Science – Prague)
- Voß, Heinrich (TU Hamburg-Harburg)
- Zemke, Jens (TU Hamburg-Harburg)