



**CAME 2007 Symposium: Second
Announcement**

**Connecting and Extending the Roles of
Computer Algebra in Mathematics Education**

The 5th CAME Symposium will be held June 19-20, 2007
in conjunction with

The First Central- and Eastern European Conference on computer Algebra- and
Dynamic Geometry Systems in Mathematics Education (CAS-DGS),
to be held June 20-23, 2007,
at the University of Pécs, Pollack Mihály Faculty of Engineering, Hungary
(<http://matserv.pmmf.hu/cadgme/>)

Computer Algebra in Mathematics Education (CAME) is an open, international organization that was founded during a special meeting at ICME-8 in Seville in July 1996. (<http://www.lonklab.ac.uk/came/>). Its main goal is to facilitate the dissemination and exchange of information on research and development in the use of computer algebra in mathematics education. Computer Algebra Systems have increasingly been incorporated into mathematics education, thus changing the mathematical environment of students and teachers at the secondary and tertiary levels.

- In August 1999, the first CAME Symposium was held at the Weizmann Institute of Science, Rehovot, Israel (<http://www.lonklab.ac.uk/came/events/weizmann/>).
- In July 2001 the second CAME Symposium was held at the Freudenthal Institute, Utrecht, The Netherlands (<http://www.lonklab.ac.uk/came/events/freudenthal/>).
- The third symposium was held at IUFM in June 2003 in Reims, France (<http://www.lonklab.ac.uk/came/events/reims/>).
- In October 2005, the fourth symposium was held at Virginia Tech, Virginia, USA, (<http://www.lonklab.ac.uk/came/events/CAME4/index.html>).

Themes of the Symposium

Theme 1: The influence of CAS on the development of procedural and structural knowledge

Coordinator: Roger Brown (rogergb@mac.com), University of Bath, UK

Presenter: Djordje Kadjevich, Megatrend University and Mathematical Institute
SANU, Belgrade, Serbia

Reactors: Micheal Meagher, Assistant Professor of Education, Brooklyn College/CUNY, NY, USA, and
Roger Brown, Visiting Research Fellow, University of Bath UK

Description: The theme will address the impact that CAS has on the development of students' procedural and structural knowledge and how this may affect students' methods for solving problems. How these altered approaches to solving problems are likely to impact on assessment will also be discussed

Theme 2: What is happening with CAS in classrooms around the world

Coordinators: Robert McCollum (rmccollum@glenbrook.k12.il.us), Glenbrook South High School, Glenview, Illinois, USA and
Natalie Jakucyn, University of Chicago School Mathematics Project, USA

Presenters: Josef Boehm, Austrian Center for Didactics of Computer Algebra, Linz, Austria.

Michael Buescher, Hathaway Brown School, Shaker Heights, Ohio, USA
Reactors: Peter Flynn, University of Melbourne, Victoria, Australia
Ibrahim Wazir, American International School-Vienna & Webster University-Vienna, Austria

Description: Much has been written, researched, and discussed about the uses and possible uses of CAS in the school mathematics classroom. CAS has been incorporated, albeit only a limited basis, into the curricula and pedagogy of many classrooms around the world. We believe that CAS impacts what goes on in the classroom in a number of different areas including content, pedagogy, and accessibility of mathematics to students. The spirit of this theme is to focus specifically on how the impact of CAS is being realized in some of the classrooms around the world. We want to explore and discuss what is happening with *actual* teachers in *authentic* classrooms with *real* children. The plenary session presenters will provide their perspectives on CAS in the classroom in the United States and Austria and the reactors will respond via an Australian and an International School point of view. The subsequent discussion will focus on utilizing the insights gained from these perspectives to frame future projects and research with regard to the impact of CAS on the curriculum and instruction of school mathematics.

Theme 3: Computer algebra and Intelligent Tutoring Systems

Coordinators: Nurit Zehavi (Nurit.Zehavi@weizmann.ac.il), Weizmann Institute, Israel and
John Monaghan (J.D.Monaghan@education.leeds.ac.uk) University of Leeds, UK

Presenter 1: Erica Melis, German Research Institute for Artificial Intelligence (DFKI), Saarbrücken and University of Saarland, Germany

Presenter 2: Chris Sangwin, University of Birmingham, UK

Description: Intelligent tutoring systems (ITSs) provide feedback to students' input in exercises. CAS can act as a service to flag a student's solution correct or incorrect. More elaborate feedback in ITSs does not only flag solutions but also intermediate steps and provides information such as whether the student's (intermediate) step was relevant, which error occurred, etc. The first presentation will demonstrate how the web-based learning environment ActiveMath uses (several) CASs to provide feedback and exploratory learning opportunities. The second presentation concerns the implementation of a computer aided assessment system for mathematics known as STACK, a System for Teaching and Assessment using a Computer algebra Kernel. STACK makes use of the computer algebra system Maxima for a variety of tasks, the most important of which is establishing mathematical properties of student's answers. The topic group will discuss common issues for CAS and ITS.

Each of the three themes will be addressed in plenary lectures and in topic groups, where the issues will be worked on in more detail, based on the experiences of the participants. The topic groups will aim at producing a synthesis of the discussions in the plenary and topic group sessions. In the discussion groups, there will be opportunities for further short presentations in addition to time set aside to discuss issues arising from the plenary addresses.

Provisional program

Tuesday, June 19th

All sessions on the first day will be plenary. Each topic session will consist of a presentation, a reaction and open discussion.

08:00 – 10:00 *Topic 1: The influence of CAS on the development of procedural and structural knowledge*

10:00 – 10:30 Refreshment break

10:30 – 12:30 *Topic 2: What is happening with CAS in classrooms around the world*

12:30 – 14:00 Lunch

14:00 – 16:00 *Topic 3: Computer algebra and Intelligent Tutoring Systems*

16:00 – 16:30 Refreshment break

16:30 – 17:30 Business Meeting

19:00 – 21:00 CAME Dinner

Wednesday, June 20th

08:30 – 10:30 Topic groups' session 1

- 10:00 – 10:30 Refreshment break
10:30 – 12:00 Topic groups' session 2
12:00 – 13:30 Lunch
13:30 – 16:00 Plenary closing session: Groups' reports and final discussion
15:00 – 15:30 Refreshment break
17:45 Opening of CAS-DGS

Symposium organizing committee:

Organizing of themes and conference arrangements involves, but is not necessarily limited to:

[Roger Brown](#), University of Bath, UK
[Kathy Heid](#), Pennsylvania State University, USA
[Natalie Jakucyn](#), Glenbrook South High School, USA
[Zsolt Lavicza](#), University of Cambridge, UK
[Robert McCollum](#), Glenbrook South High School, USA
[John Monaghan](#), University of Leeds, UK
[Csaba Sarvari](#), University of Pécs, Hungary
[Rose Mary Zbiek](#), Pennsylvania State University, USA
[Nurit Zehavi](#), Weizmann Institute, Israel

The work of CAME has been steered by an International Committee Consisting of:

[Michel Beaudin](#), Ecole de Technologie Superieure, Montreal, Canada
[Roger Brown](#), University of Bath, UK
[Paul Drijvers](#), Freudenthal Institute, University of Utrecht, Netherlands
[Kathy Heid](#), Pennsylvania State University, USA
[Cyril Julie](#), University of the Western Cape, South Africa
[Barry Kissane](#), Murdoch University, Australia
[Jean-Baptiste Lagrange](#), I.U.F.M., Reims, France
[Matija Lokar](#), University of Ljubljana, Slovenia
[John Monaghan](#), University of Leeds, UK
[Antonio Quesada](#), Akron University, Ohio, USA
[Csaba Sarvari](#), University of Pécs, Hungary
[Edith Schneider](#), University of Klagenfurt, Austria
[Anthony Watkins](#), University of Plymouth, UK [former chair]
[Hans-Georg Weigand](#), University of Wuerzburg, Germany
[Rose Mary Zbiek](#), Pennsylvania State University, USA [COMMITTEE CHAIR]
[Nurit Zehavi](#), Weizmann Institute, Israel [former chair]

Practical information and registration

Participants may attend the Symposium by registration. The number of participants is limited to 60 persons. A registration site for CAME has been set up in coordination with

the CAS-DGS site. To register for CAME (and for CAS-DGS), please see <http://www.matserv.pmmf.hu/cadgme/index.php?page=registration>. Individuals who preregistered also need to register at this site.

The Symposium fee is 95 Euro before May 1 and 110 Euro beginning May 1. The fee includes secretariat, two lunches, refreshment breaks, and dinner on Tuesday evening.

If you wish to make a short presentation, please submit a summary of your research interest at the registration web site and contact the coordinator of the topic group that best matches your interests. Papers should be submitted through the topic organizers.

For more information

For information regarding the CAME 5 program, contact:

Rose Mary Zbiek, (rmz101@psu.edu).

For information regarding CAS-DGS and local facility, contact:

Csaba Sarvari (sarvari@witch.pmmf.hu) or

Zsolt Lavicza (zl221@cam.ac.uk).