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Teaching
Mathematics and
Computer Science

Report on the
**First Central- and Eastern European
Conference on Computer Algebra-
and Dynamic Geometry Systems in
Mathematics Education,**
20–23 June, 2007, Pécs, Hungary

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Abstract. The Department of Mathematics of the University of Pécs, Pollack Mihály Engineering Faculty organized in the year 2007 a conference on the role of CAS and DGS in the Mathematics education. We discuss the conference’s activities.

Key words and phrases: Computer Algebra System (CAS), Dynamical Geometry System (DGS), educational application of CAS and DGS, CAS-DGS research.

ZDM Subject Classification: A60.

During the past four years, we organized conferences focusing on teaching-related issues in Computer Algebra Systems (CAS) and Dynamic Geometry Systems (DGS) environments at the University of Pécs. In these conferences, we realized how little we knew about the work of colleagues and how useful the presentations and discussions were for our own development. We thought that the obvious subsequent step was to organize a more comprehensive conference to learn about our colleagues’ work in the neighbouring countries. In addition, we imagined how wonderful it would be to listen to talks by leading CAS-DGS researchers from all over the world. Therefore, we decided to organize large-scale conference to create a forum for discussion for Central- and Eastern- European colleagues and for all interested academics from around the globe. Moreover, we hoped that this conference would initiate a tradition for regular meetings.

The conference “First Central- and Eastern European Conference on Computer Algebra- and Dynamic Geometry Systems in Mathematics Education”

(CADGME) was held at the University of Pécs, Pollack Mihály Faculty of Engineering on 20–23 June 2007. We are delighted that more than 150 colleagues joined us from 32 countries.

In the conference, we heard six plenary talks from well-known researchers:

- *Bruno Buchberger* (RISC, University of Linz, Austria)
- *Vlasta Kokol-Voljc* (University of Maribor, Slovenia)
- *Colette Laborde* (Université Joseph Fourier, France)
- *Kenneth Ruthven* (University of Cambridge, UK)
- *Edith Schneider* (University of Klagenfurt, Austria)
- *Luc Trouche* (INRP (National Institut of Pedagogical Research), Lyon, France)

At the conference, more than 70 contributed talks and 15 workshops were presented. Contributed talks were scheduled into General Sessions where presenters had a chance share ideas for 20 minutes and then answer questions for an additional 10 minutes. Other contributed talks were organized into seven working groups in which participants had more time to discuss ideas and work on specific topics throughout several consecutive sessions. The topics of contributions were organised into the following strands:

Teaching

- The impact of CAS-DGS on mathematics teaching
- The changing role of the teacher
- Teacher learning
- Teacher training
- Distance learning and CAS

Learning

- The impact of CAS-DGS on students' learning
- Students' attitudes toward CAS-DGS
- CAS-DGS understanding/knowledge
- Algebraic skills and CAS
- Instrumentation

Curriculum

- Design of learning environments and curricula

- Implementation of curricula and classroom practices / Innovative practices

Assessment

- Assessment CAS-DGS environments
- CAS-DGS with Web-resources

The following *working groups were organized*

- *Automated Reasoning and Mathematical Education*
Bruno Buchberger, RISC, University of Linz, Austria
- *Computer-aided Experiments and Visualization in Education*
János Karsai, University of Szeged, Hungary
- *Future Trends in Interactive Geometry*
Ulrich Kortenkamp, Pädagogische Hochschule Schwäbisch Gmünd, Germany
- *Research perspectives of the impact of dynamic mathematics on teaching and learning*
Stephen Hegedus, Luis Moreno, University of Massachusetts, Dartmouth, USA
- *Informatical Concepts and CAS*
Karl Josef Fuchs, University of Salzburg, Austria
- *Relating procedural and conceptual knowledge of mathematics through CAL*
Djordje Kadijevich, Megatrend University and Mathematical Institute SANU, Belgrade, Serbia
- *Integrated Use of Tool in Mathematics Education*
Éva Vásárhelyi, Eötvös Lorand University, Hungary / University of Salzburg, Austria

The following *workshops offered* opportunities to learn and share new ideas:

- *Mathematica in Education*
János Karsai, University of Szeged, Hungary
- *GeoGebra in Secondary School Teaching*
Markus Hohenwarter, Florida Atlantic University, USA
- *Apprenti Geometre*
G. Noel and A. Vandenbruaene, Centre de Recherche sur l'Enseignement des Mathematiques (CREM), Belgium
- *Solving Problems with Geometry Expressions and CAS*
Philipp Todd, Saltire Software, USA (Oregon)

- *Exploring symmetries with secondary school students- an introduction to mathematical concepts*
Jelena Gusic, Milin Sipus, Petar Mladinic, University of Zagreb, Croatia
- *WIRIS, mathematics for education*
Ramon Eixarch, Maths for More, Barcelona, Spain
- *WebMathematics Interactive 2.*
Zoltán Kovács, Bolyai Institute, University of Szeged, Hungary
- *MathDesktop and the LTM Project*
Phil Ramsden, Imperial College London, UK
Reinhard Simonovits, Bundeshandelsakademie Grazbachgasse, Graz, Austria
Bernd Thaller, Karl-Franzens University, Graz, Austria
- *An approach to teaching and leaning using program Graph*
Silva Kmetec, The National Education Institute of The Republic of Slovenia
- *Using Computer Algebra / Technology for modelling and application*
Burkhard Alpers, University of Aalen, Germany
- *Modeling with Sketchpad in the Teaching of Mathematics*
Homero Flores, Colegio de Ciencias y Humanidades, Universidad Nacional, México
Cvetka Rojko, The National Education Institute, Slovenia
- *Beyond DGS – Simulations and Scripting with Cinderella*
Ulrich Kortenkamp, Pädagogische Hochschule Schwäbisch Gmünd, Germany
- *Visualization of solid figures in practice with Euler3d and MAPLE*
Lajos Szilassi and László Kóródi, University of Szeged, Hungary
- *Connecting geometrical, numerical and algebraic aspects of 3D geometry using Cabri3D*
Colette Laborde, University Joseph Fourier, Grenoble, France
- *Introduction to Cabri 3D*
Kate Mackrell and Alison Parrish, University of Southampton, UK

Thirty-three colleagues submitted papers for publication to the Teaching Mathematics and Computer Science journal. Four papers were published in the fifth volume, the next three in the subsequent one. All the other papers are contained in this or next issues.

We hope that these papers contribute to advancements in CAS-DGS-related teaching and learning at all levels of education in Eastern Europe.

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