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## Update on Recent Global Digital Mathematics Library (GDML) Developments

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# Short Report on ICM2014

Michel Waldschmidt (Université Pierre et Marie Curie, Paris, France) on behalf of the Committee for Developing Countries of the EMS

The ICM 2014 in Seoul has put a strong emphasis on the need to improve the geographical distribution of mathematical research. Under the NANUM programme, 1000 mathematicians from developing countries were supported and could participate in the conference. Three NANUM Regional Networking sessions were organised on the first three evenings of the conference, one for Latin America, one for Africa and Eastern Europe and one for Asia, where the participants from these regions who were supported by the NANUM programme could meet.

ICM 2014 started on 13 August. The day before, on 12 August, a symposium “Mathematics in Emerging Nations: Achievements and Opportunities” (MENAO) was organised by the International Mathematical Union.

The Committee for Developing Countries participated in these meetings. In particular, the Committee for Developing Countries had a booth during the MENAO event, where a poster and a leaflet as well as a beamer presentation were displayed.

During international conferences, many publishers have a booth where they advertise and sell their recent books. ICM2014 was no exception. Among the exhibitors were many academic and publishing houses. At the end of the conference, most of them donated some of their remaining unsold books to our committee. Some representatives from African institutes packed these 164

books (with a total weight of 126 kg) and shipped them to their countries.

ICM2014 gave the opportunity for the Committee for Developing Countries and the Committee for European Solidarity to hold a joint meeting.

The website of our committee provides more information on our activities; in particular the homepage

<http://euro-math-soc.eu/EMS-CDC/index.php>

displays the latest news from the EMS-CDC.



*Michel Waldschmidt, emeritus professor at the University Pierre et Marie Curie (Paris 6) where he has been teaching for 40 years, is an expert in the theory of transcendental numbers and diophantine approximations. From 2001 to 2004 he was President of the Mathematical Society of France. He actively promotes the idea that developing countries also need to have good mathematicians at all levels, including at a research level. From 2005 to 2009, he was Vice-president of CIMPA (Centre International de Mathématiques Pures et Appliquées). He is Chair of the Committee for Developing Countries of the European Mathematical Society. Being retired has given him more time for his hobbies: ultra marathons and trekking.*

## Update on Recent Global Digital Mathematics Library (GDML) Developments

Thierry Bouche (Université Joseph Fourier – Grenoble I, Saint-Martin d’Hères, France)

Since the start of the millennium, the mathematical community has been considering building a Worldwide Digital Mathematics Library, where all written mathematics would be stored and made accessible. This objective has been pursued in isolation by many people around the world but it seems that the global goal has regained momentum this year: the EuDML initiative has been formed under the auspices of the EMS, an IMU-sponsored study has been published by the US National Research Council (see this newsletter’s September 2014 editorial) and a number of activities have taken place in association with the ICM.

1. A meeting to discuss the next steps towards realising the GDML was held on 17 August at ICM2014 in Seoul and attended by 14 participants in person and eight remote participants. Following a wide-ranging afternoon discussion, an eight-person working group (WG) was created, under the sponsorship of the IMU: Patrick Ion (Chair), Thierry Bouche, Bruno Buchberger, Michael Kohlhase, Jim Pitman, Olaf Teschke, Stephen Watt and Eric Weisstein.

The group began meeting immediately after the main session. It has been charged with designing a roadmap before the end of the year covering the practical next

steps toward the GDML, determining its organisational structure, prioritising the different requirements for its implementation, estimating an incremental budget (both start-up and sustaining funds) and fostering the writing of proposals to funding organisations.

This group will need to coordinate the two facets of the envisioned library: content aggregation and delivery (probably the most pressing demand of academic mathematicians); and development of radically new ways to extract, datamine, compute or activate the mathematical knowledge contained in these texts (to which researchers in computer science and artificial intelligence are eager to contribute). If this coordination achieves reasonable success then we can imagine a fantastic tool to navigate the literature, following concepts, methods and mathematical objects rather than bibliographic references, which would certainly open new paths for research in a decade or so.

2. The World Digital Mathematics Library (WDML) was the topic of a panel discussion, moderated by Peter Olver, at ICM2014 in Seoul on 20 August.

The panellists were Thierry Bouche, Ingrid Daubechies, Gert-Martin Greuel, Patrick Ion, Rajeeva Karandikar and June Zhang. Further details, including links to the panel brief and background materials, can be found on the CEIC website <http://www.mathunion.org/ceic/re->


[sources/icm-2014-panels/](http://www.mathunion.org/ceic/re-sources/icm-2014-panels/), while a videotape of the entire panel discussion appears on YouTube at <https://www.youtube.com/watch?v=OERXmv2oIyU>.

A summary of the panel will appear in the ICM proceedings, Vol. 1.

3. As a result of the meeting and the panel, the IMU has initiated a WDML blog, with Peter Olver serving as moderator, at <http://blog.wias-berlin.de/imu-icm-panel-wdml/>. The IMU encourages everyone to submit posts and to publicise the blog with the community at large.

4. The CEIC/IMU has set up a moderated email list for people interested in the WDML/GDML, to encourage additional discussions amongst experts. The address is [gdml@mathunion.org](mailto:gdml@mathunion.org) but only members can post to the list without approval. To ask to join the list, send an email to Peter Olver at [olver@umn.edu](mailto:olver@umn.edu).

*Thierry Bouche [thierry.bouche@ujf-grenoble.fr] is the Director of Cellule Mathdoc (makers of NUMDAM, CEDRAM and mini-DML) and a Member of the Institut Fourier at Université Grenoble Alpes, F-38000 Grenoble, France. He is the Chair of the EUDML initiative and a Member of the CEIC and the GDML working group (IMU).*



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## Faculty Positions in Mathematics

at Ecole polytechnique fédérale de Lausanne (EPFL)

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We seek candidates with an outstanding research record and a strong commitment to excellence in teaching at all levels. While appointments are foreseen at the tenure-track assistant professor level, in exceptional cases an appointment at a more senior level may be considered.

Substantial start-up resources and research infrastructure will be available.

Applications should include a letter of motivation, curriculum vitae, publication list, concise statement of research and teaching interests, as well as the names and addresses (including email) of at least five referees and

should be submitted via the website: <https://academicjobsonline.org/ajo/jobs/4248>

The evaluation process will start on **November 1st, 2014**, but later applications may also be considered.

Further enquiries should be made to:

**Prof. Philippe Michel**  
**Chairman of the Search Committee**  
**e-mail: [math2014@epfl.ch](mailto:math2014@epfl.ch)**

*The School of Basic Sciences actively aims to increase the presence of women amongst its faculty, and female candidates are strongly encouraged to apply.*