

Table of Contents

Calculus

The Rooster and the Butterflies	1
<i>Assia Mahboubi</i>	
Optimising Problem Formulation for Cylindrical Algebraic Decomposition	19
<i>Russell Bradford, James H. Davenport, Matthew England, and David Wilson</i>	
The Formalization of Syntax-Based Mathematical Algorithms Using Quotation and Evaluation	35
<i>William M. Farmer</i>	
Certification of Bounds of Non-linear Functions: The Templates Method	51
<i>Xavier Allamigeon, Stéphane Gaubert, Victor Magron, and Benjamin Werner</i>	
Verifying a Platform for Digital Imaging: A Multi-tool Strategy	66
<i>Jónathan Heras, Gadea Mata, Ana Romero, Julio Rubio, and Rubén Sáenz</i>	
A Universal Machine for Biform Theory Graphs	82
<i>Michael Kohlhase, Felix Mance, and Florian Rabe</i>	

MKM

Mathematical Practice, Crowdsourcing, and Social Machines	98
<i>Ursula Martin and Alison Pease</i>	
Automated Reasoning Service for HOL Light	120
<i>Cezary Kaliszyk and Josef Urban</i>	
Understanding Branch Cuts of Expressions	136
<i>Matthew England, Russell Bradford, James H. Davenport, and David Wilson</i>	
Formal Mathematics on Display: A Wiki for Flyspeck	152
<i>Carst Tankink, Cezary Kaliszyk, Josef Urban, and Herman Geuvers</i>	
Determining Points on Handwritten Mathematical Symbols	168
<i>Rui Hu and Stephen M. Watt</i>	

Capturing Hiproofs in HOL Light 184
Steven Obua, Mark Adams, and David Aspinall

A Qualitative Comparison of the Suitability of Four Theorem Provers
for Basic Auction Theory 200
*Christoph Lange, Marco B. Caninati, Manfred Kerber,
Till Mossakowski, Colin Rowat, Makarius Wenzel, and
Wolfgang Windsteiger*

Students' Comparison of Their Trigonometric Answers with the
Answers of a Computer Algebra System 216
Eno Tonisson

DML

Mathematics and the World Wide Web 230
Patrick D.F. Ion

Structural Similarity Search for Mathematics Retrieval 246
Shahab Kamali and Frank Wm. Tompa

Towards Machine-Actionable Modules of a Digital Mathematics
Library: The Example of DML-CZ 263
Michal Růžička, Petr Sojka, and Vlastimil Krejčíř

A Hybrid Approach for Semantic Enrichment of MathML Mathematical
Expressions 278
*Minh-Quoc Nghiem, Giovanni Yoko Kristianto, Goran Topić, and
Akiko Aizawa*

Three Years of DLMF: Web, Math and Search 288
Bruce R. Miller

Escaping the Trap of Too Precise Topic Queries 296
Paul Libbrecht

Using MathML to Represent Units of Measurement for Improved
Ontology Alignment 310
Chau Do and Eric J. Pauwels

Systems and Projects

A Web Interface for Isabelle: The Next Generation 326
Christoph Lüth and Martin Ring

The ForMaRE Project – Formal Mathematical Reasoning
in Economics 330
Christoph Lange, Colin Rowat, and Manfred Kerber

L ^A T _E X _{ML} 2012 – A Year of L ^A T _E X _{ML}	335
<i>Deyan Ginev and Bruce R. Miller</i>	
The MMT API: A Generic MKM System	339
<i>Florian Rabe</i>	
Math-Net.Ru as a Digital Archive of the Russian Mathematical Knowledge from the XIX Century to Today	344
<i>Dmitry E. Chebukov, Alexander D. Izaak, Olga G. Misyurina, Yuri A. Pupyrev, and Alexey B. Zhizhchenko</i>	
A Dynamic Symbolic Geometry Environment Based on the GröbnerCover Algorithm for the Computation of Geometric Loci and Envelopes	349
<i>Miguel A. Abánades and Francisco Botana</i>	
ML4PG in Computer Algebra Verification	354
<i>Jónathan Heras and Ekaterina Komendantskaya</i>	
Pervasive Parallelism in Highly-Trustable Interactive Theorem Proving Systems	359
<i>Bruno Barras, Lourdes del Carmen González Huesca, Hugo Herbelin, Yann Régis-Gianas, Enrico Tassi, Makarius Wenzel, and Burkhart Wolff</i>	
The Web Geometry Laboratory Project	364
<i>Pedro Quaresma, Vanda Santos, and Seifeddine Bouallegue</i>	
swMATH – A New Information Service for Mathematical Software	369
<i>Sebastian Bönisch, Michael Brickenstein, Hagen Chrapary, Gert-Martin Greuel, and Wolfram Sperber</i>	
Software for Evaluating Relevance of Steps in Algebraic Transformations	374
<i>Rein Prank</i>	
The DeLiVerMATH Project: Text Analysis in Mathematics	379
<i>Ulf Schöneberg and Wolfram Sperber</i>	
Author Index	383