



21st IEEE Symposium on Computer Arithmetic

ARITH 21

April 7-10, 2013

AT&T Conference Center, Austin, Texas, USA

www.arithsymposium.org

SYMPOSIUM PROGRAM

Sunday April 7th, 2013

Welcome Reception

Monday April 8th, 2013

SESSION 1: Keynote Talk

Chair: David W. Matula

High-Precision Computation: Applications and Challenges

David H. Bailey, Lawrence Berkeley Lab, USA

SESSION 2: Arithmetic Units

Chair: Stuart Oberman

The Floating-Point Unit of the Jaguar x86 Core

J. Rupley et al., AMD, USA.

Split-path Fused Floating Point Multiply Accumulate (FPMAC)

S. Srinivasan et al., Intel, India.

FPU Generator for Design Space Exploration

S. Galal et al., Stanford University, USA.

SESSION 3: Special Session

Managing Computation, Precision, Accuracy, and Performance on ExaScale Systems

Chair: Eric Schwarz

Precision, Accuracy, Rounding, and Error Propagation

Marius Cornea, Intel Corporation, USA

Managing the Dense Linear Algebra Software Stack

Robert A. van de Geijn, UT Austin, USA

Numerical Accuracy and Reproducibility at ExaScale

Hong Diep Nguyen, UC Berkeley, USA

SESSION 4: Domain Specific Designs

Chair: Paolo Montuschi

Improved Architectures for a Floating-Point Fused Dot Product Unit

J. Sohn and E. Swartzlander, UT Austin, USA.

Floating Point Architecture Extensions for Optimized Matrix Factorization

A. Pedram et al., UT Austin, USA.

A Fast Circuit Topology for Finding the Maximum of n k-bit Numbers

B. Yuce et al., Bogazici University, Turkey.

A Non-Linear/Linear Instruction Set Extension for Lightweight Ciphers

S. Engels et al., Ruhr-Universität Bochum, Germany.

Tuesday April 9th, 2013

SESSION 5: Keynote Talk

Chair: Neil Burgess

The Antikythera Mechanism and the early history of mechanical computing

Professor M.G. Edmunds, Cardiff University, UK

SESSION 6: Verification and Correctness Proofs

Chair: David Hough

On the componentwise accuracy of complex floating-point division with an FMA

C.-P. Jeannerod et al., Université Lyon 1, France.

How to Compute the Area of a Triangle: a Formal Revisit

S. Boldo, INRIA, France.

SIPE: Small Integer Plus Exponent

V. Lefèvre, INRIA, France.

A Formally-Verified C Compiler Supporting Floating-Point Arithmetic

S. Boldo et al., INRIA, France.

SESSION 7: Modular Arithmetic

Chair: Peter Kornerup

Fault Detection in RNS Montgomery Modular Multiplication

J. Eynard et al., Université P. et M. Curie, France.

The unary arithmetical algorithm in bimodular number systems

P. Kurka and M. Delacourt

Parallel modular multiplication on multi-core processors

P. Giorgi et al., Université Montpellier 2, France.

SESSION 8: Floating-Point Error Analysis

Chair: Sanu Mathew

Comparison between binary64 and decimal64 floating-point numbers

N. Brisebarre et al., ENS Lyon, France.

Accurate Parallel Floating-Point Accumulation

E. Kadric et al., Univ Pennsylvania, USA.

Fast Reproducible Floating-Point Summation

H. D. Nguyen and J. Demmel, UC Berkeley, USA.

Wednesday April 10th, 2013

SESSION 9: Function Approximation

Chair: Debjit DasSarma

Multiple precision evaluation of the Airy Ai function with reduced cancellation

S. Chevillard and M. Mezzarobba, ENS Lyon, (F).

Accurate and Fast Evaluation of Elementary Symmetric Functions

H. Jiang, S. Graillat and R. Barrio

Truncated Logarithmic Approximation

M. Sullivan and E. Swartzlander, UT Austin, USA.

SESSION 10: Arithmetic in Cryptography

Chair: Naofumi Takagi

Relation Collection for the Function Field Sieve

J. Detrey, P. Gaudry and M. Videau, LORIA, France.

Another Look at Inversions over Binary Fields

V. Dimitrov and K. Järvinen

On-the-Fly Multi-Base Recoding for ECC Scalar Multiplication without Pre-Computations

T. Chabrier and A. Tisserand, IRISA, France.

REGISTRATION INFO

	by March 1 st	after March 1 st
IEEE Member	US\$ 540	US\$ 650
Non-IEEE Member	US\$ 690	US\$ 830
Life Member	US\$ 300	US\$ 380
Student Member	US\$ 300	US\$ 380
Student non-Member	US\$ 375	US\$ 450

To register go to the page:

<http://arithsymposium.org/registration.html>

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