

# **15th GAMM-IMACS International Symposium on Scientific Computing, Computer Arithmetic and Verified Numerical Computations**

**(SCAN'2012)**

**Special volume devoted to materials presented at SCAN 2012**

**Reliable Computing Volume 19**

**Novosibirsk, Russia**

**23 – 29 September 2012**

**Editors:**

**Sergey Shary**

**George Corliss**

**ISBN: 978-1-63266-221-7**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2012) by the Institute of Computational Technologies  
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact the Institute of Computational Technologies  
at the address below.

Institute of Computational Technologies  
6 Acad. Lavrentjev Avenue  
630090 Novosibirsk  
Russia

Phone: (383) 330 61 50  
Fax: (383) 330 63 42

[ict@ict.nsc.ru](mailto:ict@ict.nsc.ru)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## Volume 19 (Special volume devoted to material presented at [SCAN 2012](#))

Guest editors: [Сергей Петрович Шарый \(Sergey Shary\)](#) and [George Corliss](#)  
Note: Papers are being posted on a continuing basis as the editorial process on each is completed, until all accepted articles for this special volume are posted.

### Issue 1

- [Stepan Yu. Gatilov, \*Efficient Angle Summation Algorithm for Point Inclusion Test and Its Robustness\*, pp. 1-25.](#)
- [Elena K. Kostousova, \*On Boundedness and Unboundedness of Polyhedral Estimates for Reachable Sets of Linear Differential Systems\*, pp. 26-44.](#)
- [Tomoaki Okayama, \*Error Estimates with Explicit Constants for Sinc Quadrature and Sinc Indefinite Integration over Infinite Intervals\*, pp. 45-65.](#)
- [Andreas Rauh, Ramona Westphal, Harald Aschemann, and Ekaterina Auer, \*Exponential Enclosure Techniques for the Computation of Guaranteed State Enclosures in ValEncIA-IVP\*, pp. 66-90.](#)
- [Nathalie Revol and Philippe Théveny, \*Parallel Implementation of Interval Matrix Multiplication\*, pp. 91-106.](#)
- [Alexander V. Prolubnikov, \*An Interval Approach to Pattern Recognition of Numerical Matrices\*, pp. 107-119.](#)
- [Ilya B. Labutin and Irina V. Surodina, \*Algorithm for Sparse Approximate Inverse Preconditioners in the Conjugate Gradient Method\*, pp. 120-126.](#)

### Issue 2

- [A. Minamihata, K. Sekine, T. Ogita, and S. Oishi, \*Fast Verified Solutions of Sparse Linear Systems with H-matrices\*, pp. 127-141.](#)
- [J. Horáček and M. Hladík, \*Computing Enclosures of Overdetermined Interval Linear Systems\*, pp. 142-155.](#)
- [Ekaterina Auer and Stefan Kiel, \*Uses of Verified Methods for Solving Non-Smooth Initial Value Problems\*, pp. 156-175.](#)
- [Dmitri Yu. Lyudvin and Sergey P. Shary, \*Testing Implementations of PPS-methods for Interval Linear Systems\*, pp. 176-196.](#)
- [Sergey I. Kumkov and Yuliya V. Mikushina, \*Interval Approach to Identification of Catalytic Process Parameters\*, pp. 197-214.](#)
- [Anatoly V. Panyukov and Valentin A. Golodov, \*Computing Best Possible Pseudo-Solutions to Interval Linear Systems of Equations\*, pp. 215-228.](#)

### Issue 3

- [Dmitry Yu. Nadezhin and Sergei I. Zhilin, \*JInterval Library: Principles, Development, and Perspectives\*, pp. 229-247.](#)
- [Maxim I. Pushkarev and Sergey A. Gaivoronsky, \*Maximizing Stability Degree of Control Systems under Interval Uncertainty Using a Coefficient Method\*, pp. 248-260.](#)