Research active 2018

Published articles

1)酒井将大, 田中一成, 大石進一:半線形楕円型境界値問題の精度保証付き数値計算結果の改善, 日本応用数理学会論文誌, 24巻, 1号, 17-45, (2019)(in Japanese).

2) Yuta Matsushima, Kazuaki Tanaka, and Shin'ichi Oishi: Numerical verification method for positive solutions of Allen-Cahn equation using sub- and super-solution method, book of abstracts scan 2018, pp.134, 2018 (Conference proceeding)

3)Atsushi Minamihata, Takeshi Ogita, Siegfried M. Rump, and Shin'ichi Oishi: Two verification methods for linear systems using H-matrix, book of abstracts scan 2018, pp.146-147, 2018 (Conference proceeding)

4) Ryo Kobayashi, Atsushi Minamihata, and Shin'ichi Oishi: Verification method for solution of symmetric saddle point linear system with null space method, book of abstracts scan 2018, pp.150-151, 2018 (Conference proceeding)

5) Makoto Mizuguchi, Kazuaki Tanaka, Kouta Sekine, and Shin'ichi Oishi: "Estimation of Sobolev embedding constant on a bounded convex domain", book of abstracts scan 2018, pp.164-165, 2018 (Conference proceeding)

6) Xuefeng LIU, Mitsuhiro NAKAO, and Shin'ichi Oishi: Approach to the Stationary Solution Verification for the Navier-Stokes Equation in 3D Domain, book of abstracts scan 2018, pp.168-169, 2018 (Conference proceeding)

7) Naoya Yamanaka, Tomoaki Okayama, and Shin'ichi Oishi: Verified algorithm for the sine integral, book of abstracts scan 2018, pp.170-171, 2018 (Conference proceeding)

Review and books

1) S. Oishi, K. Ichihara, M. Kashiwagi, K. Kimura, X. Liu, H. Masai, Y. Morikura, T. Ogita, K. Ozaki, S.M. Rump, K. Sekine, A. Takayasu, and N. Yamanaka. Principle of Verified Numerical Computations. *Corona publisher*, 311 pages, Tokyo, Japan, 2018 (in Japanese).

Invited talks

1) Yuka Yanagisawa and Sin'ichi.Oishi, "Robust guaranteed eigenvalue evaluation method, ", ICIAM18 Board Meeting & Workshop, Drexel University, Philadelphia, USA, (2018/5/11)

2) 水口信, 関根 晃太, 中尾充宏, 大石進一 "半線形熱方程式の解の精度保証付き数値計算法について", 第2回 精度保証付き数値計算の実問題への応用研究集会, 広島インテリジェントホテル スタジアム前 (本館), (2018/12/1)

Talks

1) **講演題目**: 3次元領域におけるNavier-Stokes方程式の定常解の検証 日本応用数理学会 2018 年度 発表会, 名古屋大学東山キャンパス, 2018 年 9 月 3 日

2) **講演題目**: Numerical verification method for positive solutions of Allen-Cahn equation using sub- and super-solution method, The 18th International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations (SCAN2018), 2018**年**9**月**13**日**

3) **講演題目**: Two verification methods for linear systems using H-matrix, The 18th International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations (SCAN2018), 2018**年**9**月**13**日**

4) **講演題目**: Verification method for solution of symmetric saddle point linear system with null space method, The 18th International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations (SCAN2018), 2018**年9月13日**

5) **講演題目**: Estimation of Sobolev embedding constant on a bounded convex domain, The 18th International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations (SCAN2018), 2018**年9月14日**

6) **講演題目**: Approach to the Stationary Solution Verification for the Navier-Stokes Equation in 3D Domain, The 18th International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations (SCAN2018), 2018**年9月14日**

7) **講演題目**: Verified algorithm for the sine integral, The 18th International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations (SCAN2018), 2018**年9月14日**

8) **講演題目**: 非線形関数微分方程式の周期解の精度保証付き数値解法, **日本応用数理学会 2019年 研究部会連合発表会**, 2019**年3月4日**

9) **講演題目**: 遅延Duffing方程式の厳密な周期解の数値的包含, 2019**年電子情報通信学会総合大会**, 2019**年3月16日**

Academic society and social activities

1) SCAN 2018 Workshop on Recent Results of Mathematical Science and Computer Assisted Proofs., Kanazawa Institute of Technology (2018/5/19)

2) The 18th International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations(SCAN 2018) Scientific, The International Conference Center at Waseda University (Waseda Campus), Tokyo, Japan.(2018/9/10-15)

3) 2018 Workshop on Recent views of Nonlinear Analysis, The Toba Chamber of Commerce and Industry(2018/12/8-12/10)

Research results

1) An improvement of a fast verification method for a solution of linear systems with a symmetric 2-by-2 block coefficient matrix.

2) Methods of solving generalized eigenvalue problems of matrices has been improved.

3) A study of elliptic partial differential equation has been applied to a verified numerical computation for a solution to semilinear heat equations.

4) Estimations of the embedding constants on bounded convex domains have been proposed.

5) A verified numerical computation for a periodic solution of the delay differential equations has been proposed.