

Springer Transactions on Computational Science (TCS)

Call for Papers

Special Issue on: **Reversible Computing**

Deadline: Feb 28, 2014

Guest Editor(s):

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Schedule:

Submission Deadline: Feb 28, 2014

Author Notification: May 28, 2014

Revised Manuscripts Due: June 30, 2014

Notification of Final Acceptance: July 30, 2014

Final Manuscripts Due: Aug 30, 2014

Publication Date: Fall 2014/Spring 2015

Authors are invited to submit papers for a special issue on ‘reversible computing’ in Springer *Transactions on Computational Science* that will provide a comprehensive review on fundamentals as well as the current state-of-the-art of reversible computing. Reversible computing has promising applications in emerging nanotechnologies such as quantum computing, ultra-low-power nanocomputing, Quantum Dot Cellular automata (QCA) computing, Optical Computing, and Superconductor Flux Logic (SFL) family, DNA computing, etc. The special issue invites authors to submit papers on physical realizations, experimental validations and theoretical solutions of reversible computing in conventional CMOS paradigm as well as in emerging computing paradigms such as quantum dot cellular automata (QCA) computing, optical computing, superconductor flux logic family, DNA computing, magnetic computing, etc. The special issue will also provide a publication medium for articles that address implementation of reversible circuits in unconventional computation and natural computation domain such as quantum, cellular, molecular, cellular automata, collision-based computing, etc. The issue invites papers on design, synthesis and test of reversible circuits, and important concepts of logical and physical reversibility. The applications of reversible computing in low-power green computing, biomedical devices, emerging nanotechnologies (such as DNA computing, quantum computing, etc), security, cryptography, supercomputing, encoding-decoding of devices, reversible software systems, other novel paradigms and industrial applications will be of special interest.

Topics of interest include but are not limited to:

- Reversible Computing: Introduction and Motivation, and Future Challenges
- Physical Realizations of Reversible Computing in Conventional, Unconventional and Natural Computation Paradigm.
- Experimental and Theoretical Research on Landauer’s Principle and Reversible Computation.
- Logic and Physical Reversibility, Thermodynamic limits, etc.
- Reversible Logic for Ultra Low Power Green Computing, Adiabatic Computing, Charge recovery computing, etc.
- Design and Synthesis of Reversible Circuits
- Reversible Processor Architectures, Reversible Quantum Arithmetic
- Reversible Software Systems, Programming Languages, Compiler, etc.
- Quantum Computation: logic gates & circuits, algorithms, physical implementations
- Fault testing, Fault tolerance, Error Correction in Reversible Circuits
- Application in Security, Cryptography, Encoding/Decoding Devices, Biomedical Devices, Supercomputing, and Other Novel Paradigms
- Applications in Emerging nanotechnologies such as Quantum Dot Cellular automata (QCA) computing, Optical Computing, DNA Computing and Superconductor Flux Logic (SFL) family, etc.

Submission Procedure:

Manuscripts must conform to the LNCS style, and be limited to 20 pages (<http://www.springer.com/computer/lncs?SGWID=0-164-6-793341-0>). The expanded versions of previously published conference research papers must have at least 30% new material; authors should attach a separate sheet on the submission describing how the manuscript differs from the conference paper. Complete manuscript in PDF format should be submitted for review to the Corresponding Guest Editor, Dr. Himanshu Thapliyal at Email: himanshu.thapliyal@gmail.com by the submission deadline. For any questions, please contact Corresponding Editor.