

**2019 IEEE/ACM 14th
International Workshop on
Software Engineering for Science
(SE4Science 2019)**

**Montreal, Quebec, Canada
28 May 2019**



**IEEE Catalog Number: CFP19G07-POD
ISBN: 978-1-7281-2277-9**

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP19G07-POD
ISBN (Print-On-Demand):	978-1-7281-2277-9
ISBN (Online):	978-1-7281-2276-2

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) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2019 IEEE/ACM 14th International Workshop on Software Engineering for Science (SE4Science) **SE4Science 2019**

Table of Contents

SE4Science 2019 Welcome Message .vii.....
SE4Science 2019 Committees .viii.....

Full Papers

Creating Stable Productive CSE Software Development and Integration Processes in Unstable
Environments on the Path to Exascale .1.....
*Roscoe Bartlett (Sandia National Laboratories) and Joseph R. Frye
(Sandia National Laboratories)*

An HPC Perspective on Generative Programming .9.....
*Dominic Kempf (Heidelberg University) and Peter Bastian (Heidelberg
University)*

Research Software Development & Management in Universities: Case Studies from Manchester's RSDS
Group, Illinois' NCSA, and Notre Dame's CRC .17.....
*Daniel S. Katz (University of Illinois at Urbana-Champaign), Kenton
McHenry (University of Illinois at Urbana-Champaign), Caleb Reinking
(University of Notre Dame), and Robert Haines (University of
Manchester)*

Challenges for Verifying and Validating Scientific Software in Computational Materials Science .25.....
*Thomas Vogel (Humboldt-Universität zu Berlin), Stephan Druskat
(Humboldt-Universität zu Berlin & German Aerospace Center), Markus
Scheidgen (Humboldt-Universität zu Berlin), Claudia Draxl
(Humboldt-Universität zu Berlin), and Lars Grunke
(Humboldt-Universität zu Berlin)*

Debunking the Myth That Upfront Requirements Are Infeasible for Scientific Computing Software .33.....
*Spencer Smith (McMaster University), Malavika Srinivasan (McMaster
University), and Sumanth Shankar (McMaster University)*

Position Papers

Position Paper: Towards Usability as a First-Class Quality of HPC Scientific Software .41.....
*Reed Milewicz (Sandia National Laboratories) and Paige Rodeghero
(Clemson University)*

Short Papers

Learning Units-of-Measure from Scientific Code 43.....	43
<i>Matthew Danish (University of Cambridge), Miltiadis Allamanis (Microsoft Research), Marc Brockschmidt (Microsoft Research), Andrew Rice (University of Cambridge), and Dominic Orchard (University of Kent)</i>	
Releasing Scientific Software in GitHub: A Case Study on SWMM2PEST 47.....	47
<i>Xuanyi Lin (University of Cincinnati), Michelle Simon (Environmental Protection Agency), and Nan Niu (University of Cincinnati)</i>	
Susereum: Towards a Reward Structure for Sustainable Scientific Research Software 51.....	51
<i>Omar Badreddin (University of Texas El Paso), Wahab Hamou-Lhadj (Concordia University), and Swapnil Chauhan (University of Texas El Paso)</i>	
Author Index 55	55