

2019 IEEE/ACM International Workshop on Programming and Performance Visualization Tools (ProTools 2019)

**Denver, Colorado, USA
17 November 2019**



**IEEE Catalog Number: CFP19W42-POD
ISBN: 978-1-7281-6027-6**

**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:	CFP19W42-POD
ISBN (Print-On-Demand):	978-1-7281-6027-6
ISBN (Online):	978-1-7281-6026-9

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 International Workshop on Programming and Performance Visualization Tools (ProTools) **ProTools 2019**

Table of Contents

Message from the ProTools 2019 Workshop Chairs .v.....
Organization .vii.....

Technical Papers

Understanding the Performance of GPGPU Applications from a Data-Centric View .1.....
*Hui Zhang (Samsung Semiconductor Inc.) and Jeffrey Hollingsworth
(University of Maryland)*

Asvie: A Timing-Agnostic SVE Optimization Methodology .9.....
*Miguel Tairum Cruz (ARM Ltd.), Daniel Ruiz (ARM Ltd.), and Roxana
Rusitoru (ARM Ltd.)*

Designing Efficient Parallel Software via Compositional Performance Modeling .17.....
*Alexandru Calotoiu (Technical University Darmstadt), Thomas Höhl
(Technical University Darmstadt), Heiko Mantel (Technical University
Darmstadt), Toni Nguyen (Technical University Darmstadt), and Felix
Wolf (Technical University Darmstadt)*

Performance Analysis of Tile Low-Rank Cholesky Factorization Using PaRSEC Instrumentation Tools .25.....
*Quinglei Cao (University of Tennessee), Yu Pei (University of
Tennessee), Thomas Heraldt (University of Tennessee), Kadir Akbudak
(King Abdullah University of Science and Technology), Aleksandr
Mikhalev (King Abdullah University of Science and Technology), George
Bosilca (University of Tennessee), Hatem Ltaief (King Abdullah
University of Science and Technology), David Keyes (King Abdullah
University of Science and Technology), and Jack Dongarra (University
of Tennessee)*

The Case for a Common Instrumentation Interface for HPC Codes .33.....
*David Boehme (Lawrence Livermore National Laboratory), Kevin Huck
(University of Oregon), Jonathan Madsen (Lawrence Berkeley National
Laboratory), and Josef Weidendorfer (Leibniz Supercomputing Centre)*

Automatic Instrumentation Refinement for Empirical Performance Modeling .40.....
*Jan-Patrick Lehr (Technical University Darmstadt), Alexandru Calotoiu
(Technical University Darmstadt), Christian Bischof (Technical
University Darmstadt), and Felix Wolf (Technical University Darmstadt)*

Multi-Level Performance Instrumentation for Kokkos Applications Using TAU .48.....
Sameer Shende (ParaTools Inc), Nicholas Chaimov (ParaTools Inc), Allen Malony (ParaTools Inc), and Neena Imam (Oak Ridge National Laboratory)

CHAMPVis: Comparative Hierarchical Analysis of Microarchitectural Performance .55.....
Lillian Pentecost (Harvard University), Udit Gupta (Harvard University), Elisa Ngan (Harvard University), Johanna Beyer (Harvard University), Gu-Yeon Wei (Harvard University), David Brooks (Harvard University), and Michael Behrisch (Harvard University)

In Situ Visualization of Performance Metrics in Multiple Domains .62.....
Allen Sanderson (University of Utah), John Schmidt (University of Utah), Alan Humphrey (University of Utah), Michael Papka (Northern Illinois University), and Robert Sisneros (University of Illinois)

Toward a Programmable Analysis and Visualization Framework for Interactive Performance Analytics .70.....
Tanzima Islam (Texas State University), Alexis Ayala (Western Washington University), Quentin Jensen (Western Washington University), and Khaled Ibrahim (Lawrence Berkeley National Laboratory)

Author Index 79.....