Olga Pearce

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Research Interests

Parallel and distributed computing, parallel algorithms and optimizations, distributed data structures, parallel performance modeling and optimization, application load balancing, parallel programing models, communication on heterogeneous architectures, generic parallel libraries and tools.

Education

2014 **Ph.D., Computer Science**, *Texas A&M University*.
Load Balancing Scientific Applications. Advisor: Prof. Nancy M. Amato, Ph.D.

2004 **B.S., Computer Science and Mathematics**, *Western Oregon University*, Magnum Cum Laude.

2000 **A.A., Business Administration**, *International Christian University*, Kyiv, Ukraine.

Research Experience

2014-present **Lawrence Livermore National Laboratory**, *Computer Scientist*.
- (2019-present) (545k/year) Principal Investigator for Performance Analysis and Visualization at Exascale (PAVE) Project, which includes the Hatchet project, a call-tree based tool for performance analysis of HPC applications [12, 15, 34].
- (2018-present) LLNL application point of contact for CORAL1 and CORAL2 Tools Working Groups [33].
- (2018-present) LLNL application point of contact for CORAL1 and CORAL2 Messaging Working Groups [2, 11, 32, 35, 36].
- Developing techniques and tools for analyzing and optimizing performance of large scale multiphysics simulations on homogeneous and heterogeneous architectures, including Caliper [5, 37, 40, **?**, 43, 44].
- Developing techniques and tools for load balancing scientific applications [3, 17].
- Developing parallel programming models and tools, including RAJA [4, 13, 14, 16, 38, 39, 45, 50].
- Developing communication techniques for heterogeneous architectures [1]. Exploratory benchmark Comb [32, 35, 36]. Member of MPI Hybrid & Accelerator Working Group.

2009-2014 **Lawrence Livermore National Laboratory**, *Lawrence Scholar*.
- Developed a model enabling the comparison of and selection among balancing algorithms for a specific state of a simulation [8].
- Developed an accurate and fast method to evaluate and balance the load in N-Body simulations with highly non-uniform density, based on adaptive sampling [7].
- Developend a framework for decoupling and offloading the load balance computation, enabling lazy load balancing [6].

2004-2009 **Texas A&M University, Department of Computer Science**, *Research Assistant*.
- Worked on distributed data structures in the Standard Template Adaptive Parallel Library (STAPL), a parallel superset of the C++ Standard Template Library [9, 18, 19].
- Designed and implemented a set of parallel algorithms for STAPL. Assisted in development of the adaptive algorithm selection framework for STAPL [10].
- Explored the idea of lock-free containers for multi-threaded programming.
- Worked on a Dynamic Graph Composition Library for updating graph metrics of large, dynamic graphs.

May-Oct 2007, **Lawrence Livermore National Laboratory**, *Research Intern*.
July-Aug 2008 Worked on load balancing a multi-physics simulation via domain repartitioning and domain replication. Devised techniques to cheaply estimate processor loads and decide when a load imbalance needs to be corrected. Incorporated multi-constraint repartitioning (data parallelism) and domain replication (task parallelism) as a way to correct imbalance.

Summer 2003, **Texas A&M University, Department of Computer Science**, *Undergraduate Research Intern*.
Summer 2004 Designed and implemented a parallel array data structure and multiple parallel algorithms for the Standard Template Adaptive Parallel Library (STAPL), a parallel library for C++, superset of STL.

Conferences & Workshops Organized

2019-Present   **Salishan Conference on High Speed Computing**, *Co-Chair*.
Conference on computer architecture, languages, and algorithms organized by the tri-labs (LLNL, LANL, Sandia). 150+ attendees.

2018-Present   **Nuclear Explosives Code Development Conference (NECDC)**, *Co-Chair*.
Fundamental and applied research topics related to computational simulation. 300+ attendees.

2018-Present   **JOWOG 34 Applied Computer Science (ACS)**, *Co-Chair*.
Scalable algorithms & simulation techniques for LLNL, LANL, Sandia (US) and AWE (UK). 150+ attendees.

2018   **Students@SC Program at ACM/IEEE Supercomputing Conference (SC)**, *Vice-chair*.
Organized 2-day program for undergraduate and graduate students at SC. 200+ attendees.

Committees

2019-2021   **Lawrence Livermore National Laboratory (LLNL)**, *Labwide Laboratory Directed Research and Development (LW LDRD) Committee Member*.

2021   **International Conference on Supercomputing (ISC)**, *Chair, Ph.D. Forum*.

2020,2021   **IEEE International Parallel & Distributed Processing Symposium (IPDPS)**, *Programming Models and Compilers Papers Committee Member*.

2020   **ACM/IEEE Supercomputing Conference (SC)**, *Performance Papers Committee Member*.

2020   **EuroMPI**, *Technical Papers Committee Member*.

2019,2020   **IEEE Cluster**, *Programming and System Software Papers Committee Member*.

2020   **Journal of Concurrency and Computation**, *Reviewer*.

2020   **International Conference on Supercomputing (ISC)**, *Vice-Chair, Ph.D. Forum*.

2020   **International Conference on Supercomputing (ISC)**, *Tutorials Committee Member*.

2015-2019   **Lawrence Livermore National Laboratory (LLNL)**, *Computation Directorate representative on Livermore Graduate Scholar Program (LGSP) Committee*.

2015,2019   **ACM/IEEE Supercomputing Conference (SC)**, *Research Posters Committee Member*.

2019   **Lawrence Livermore National Laboratory (LLNL)**, *Science and Technology Awards Committee*.

2019   **International Conference on Supercomputing (ISC)**, *Ph.D. Forum Committee Member*.

2019   **IEEE International Parallel & Distributed Processing Symposium (IPDPS)**, *Multidisciplin*.

2019   **Journal of Signal Processing Systems**, *Reviewer*.

2018   **International Conference on Parallel Processing (ICPP)**, *Chair of the Software Track*.

2010,2011,2018   **ACM/IEEE Supercomputing Conference (SC)**, *Tutorials Committee Member*.

2018   **IEEE International Conference on Cluster Computing (Cluster)**, *System Software Track*.

2018-present   **Parallel Computing Journal**, *Reviewer*.

2018   **IEEE International Parallel & Distributed Processing Symposium (IPDPS)**, *Progr. Models*.

2018   **IEEE/ACM Intl Conf Cluster, Cloud, &Grid Computing (CCGrid)**, *Perf. Modeling & Eval.*

2017   **EuroMPI/USA 2017**, *Research Posters Program Committee*.

2017   **ACM/IEEE Supercomputing Conference (SC)**, *Perf. Measurement, Modeling, and Tools*.

2017   **IEEE International Conference on Cluster Computing (Cluster)**, *Apps, Algos, & Libraries*.

2017   **International Conference on Parallel Processing (ICPP)**, *Software*.

2017   **IEEE International Parallel & Distributed Processing Symposium (IPDPS)**, *Software*.

2016,2017   **Grace Hopper Conference**, *Computer Systems Engineering*.

2015   **ACM/IEEE Supercomputing Conference (SC)**, *BoF: Progr. Languages, Models, & Compilers*.

2011   **Small Business Innovation Research (SBIR)**, *DOE Office of Science Grant Review*.

2011   **ACM/IEEE Supercomputing Conference (SC)**, *Student Cluster Challenge*.

2008   **ACM/IEEE Supercomputing Conference (SC)**, *Broader Engagement*.

Teaching and Mentoring

2015-present **Student Research Mentoring**, *Lawrence Livermore National Laboratory*.
- (Fall 2019 - Present) Bengisu Elis, CS major (PhD), Techical University of Munich, Germany. Working on research directions for MPI on heterogeneous architectures.
- (Summer 2020 - Present) Connor Scully-Allison, CS major (PhD), University of Arizona. Working on optimization of Hatchet, a call-tree based tool for performance analysis of HPC applications.
- (Spring 2020 - Present) Ian Lumsden, CS major (PhD), University of Tennessee. Working on a query language for Hatchet, a call-tree based tool for performance analysis of HPC applications.
- (Summer 2020) Kawthar Shafie Khorassani, CS major (PhD), The Ohio State University. Worked on GPUDirect Async Designs with MVAPICH2-GDR.
- (Summer 2020) Katy Williams, CS major (PhD), University of Arizona. Worked on interactive tree visualization for Hatchet, a call-tree based tool for performance analysis of HPC applications.
- (Summer 2018 and 2019) David Eberius, CS major (PhD), University of Tennessee. Worked on porting CoMD, an ExMatEx proxy application to RAJA, and optimizing communication on GPUs. Worked on load balancing metrics for heterogeneous architectures.
- (Summer 2018) Kewen Meng, CS major (PhD), University of Oregon. Worked on porting CoMD, an ExMatEx proxy application to RAJA, and optimizing performance for the CUDA RAJA backend.
- (Summer 2016) Hadia Ahmed, CS major (PhD), University of Alabama at Birmingham. Studied performance impact of initial load imbalance and dynamic imbalance in the modified version of CoMD, an ExMatEx proxy application.
- (Summer 2015) Rasmus Larsen, CS major (MS), University of Copenhagen. Enabled overdecomposition and dynamic work redistribution in CoMD, an ExMatEx proxy application. Implemented a mechanism for introducing initial load imbalance and varying the imbalance throughout the simulation to facilitate exploration of various load balancing schemes.

2007 **Student Team Mentoring**, *Cluster Challenge*, ACM/IEEE Supercomputing Conference (SC).
- Mentored teams participating in the challenge, provided technical expertise in parallel performance and parallel applications ported by the teams to their clusters during the challenge.

2005-2009 **Student Research Mentoring**, *Texas A&M University*.
- Jeremy Vu, CSE major, Texas A&M University. Worked on parallel algorithms in STAPL.
- Harshvardhan, CS major, Texas A&M. Worked on STAPL Graph, Dynamic Graph Composition Library.
- Kelli Bacon, CRA-W DMP Program. CE major, Gonzaga U. Dynamic Graph Composition Library.
- Saransh Mittal, CSE major, Indian Inst. of Technology, Bombay. Dynamic Graph Composition Library.
- Anna Tikhonova, CRA-W DMP Program. CS major, U. of San Francisco. Parallel algorithms in STAPL.

2006 **Fellow**, *Graduate Teaching Academy*, Texas A&M University.

2006 **Student Mentoring Award**, *Aggie Women in Comp. Science (AWICS)*, Texas A&M University.

2002-2004 **Teaching Assistant**, *Department of Mathematics*, Western Oregon University.

2002-2004 **Tutor**, *Dept. of Computer Science* and *Dept. of Mathematics*, Western Oregon University.

2001-2004 **Youth Mentor**, *HOST Youth and Family Program*, Northwest Human Services.

Awards

2020 **Design Physics Division (DPD) Bronze Award**, *Lawrence Livermore National Laboratory*, for authoring an article in Journal of Weapon Physics.

2019 **Weapons and Complex Integration (WCI) Gold Award**, *Lawrence Livermore National Laboratory*, for porting and optimization of programmatic application codes on Sierra.

2018 **Weapons Simulation Codes (WSC) Computational Physics Silver Star Award**, *Lawrence Livermore National Laboratory*, for developing and applying the RAJA performance portability programming model.

2015 **Deputy Director's for Science and Technology (DDS&T) Excellence in Publication Award**, *Lawrence Livermore National Laboratory*, for work in load balancing.

2009-2014 **Lawrence Scholar Program (LSP) Fellowship**, *Lawrence Livermore National Laboratory*. *Technical Supervisor:* Bronis R. de Supinski, Ph.D.

2006-2009 **NSF Graduate Research Fellowship**, Texas A&M University.

2004-2007 **GAANN Fellowship**, Texas A&M University.

2004-2005	Association of Former Students Fellowship, Texas A&M University.
2007-2011	Broader Engagement grant recipient, Supercomputing Conference.
2007	Award to attend CRA-W/CDC Programming Languages Workshop.
2005-2007	Award to attend and speak at CRA-W Grad Cohort, Computing Research Association.
2004	Award to attend Grace Hopper Conference and DMP reunion, Computing Research Association.
2003,2004	**Distributed Mentor Project**; Computing Research Association.
2004	Outstanding Senior in Computer Science; Western Oregon University.
2003	Outstanding Achievement in Computer Science, Outstanding Achievement in Mathematics.
2003	Who's Who Among Students in American Colleges and Universities, Phi Kappa Phi member.
1997	**Future Leaders Exchange Program**; one of one hundred recipients nationwide. U.S. Department of State, Freedom Support Act.

Skills

General	C/C++, Java, Python, git, svn, CVS, autotools, CMake.
High Performance Computing	Parallel performance tool development in C/C++. MPI profiling tools, runtime systems. Parallel algorithms and data structures. Measurement, analysis, and tuning of parallel applications on large clusters (IBM Blue Gene, Linux). Experience with large physics codes at LLNL.
Load Balancing	Measurement tools, load analysis metrics, (hyper)graph partitioners, load balancing algorithms.
Graduate Coursework	Algorithm Analysis, Parallel Algorithms, Generic Programming, Programming Languages, C++ Language Design, Computer Architecture, Compiler Design, Machine Learning, Numerical Methods, Supercomputing, and Runtime Systems.
Languages	English (fluent), Ukrainian (native), Russian (fluent)

Publications

Selected Refereed Publications

[1] Bengisu Elis, Dai Yang, **Olga Pearce**, Kathryn Mohror, and Martin Schulz. QMPI: A Next Generation MPI Profiling Interface for Modern HPC Platforms. In *Journal of Parallel Computing*, 2020. LLNL-JRNL-787898.

[2] Christopher Zimmer, Scott Atchley, Ramesh Pankajakshan, Brian E. Smith, Ian Karlin, Matt Leininger, Adam Bertsch, Brian S. Ryujin, Jason Burmark, André Walker-Loud, M. A. Clark, and **Olga Pearce**. An Evaluation of the CORAL Interconnects. In *ACM/IEEE International Conference for High Performance Computing, Networking, Storage, and Analysis (SC'19)*, 2019. LLNL-CONF-772398.

[3] **Olga Pearce**, Hadia Ahmed, Rasmus W. Larsen, Peter Pirkelbauer, and David F. Richards. Exploring Dynamic Load Imbalance Solutions with the CoMD Proxy Application. In *Future Generation Computer Systems (FGCS)*, 2018. LLNL-JRNL-725317.

[4] David Beckingsale, **Olga Pearce**, Ignacio Laguna, and Todd Gamblin. Apollo: Reusable Models for Fast, Dynamic Tuning of Data-Dependent Code. In *IEEE International Parallel & Distributed Processing Symposium (IPDPS'17)*, Orlando, Florida, USA, May 29 - June 2, 2017.

[5] David Boehme, Todd Gamblin, David Beckingsale, Peer-Timo Bremer, Alfredo Giménez, Matthew LeGendre, **Olga Pearce**, and Martin Schulz. Caliper: Performance Introspection for HPC Software Stacks. In *ACM/IEEE International Conference for High Performance Computing, Networking, Storage, and Analysis (SC'16)*, Salt Lake City, Utah, USA, November 13-18, 2016. LLNL-CONF-699263. (18%).

[6] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. MPMD Framework for Offloading Load Balance Computation. In *IEEE International Parallel & Distributed Processing Symposium (IPDPS'16)*, Chicago, Illinois, USA, May 23-27, 2016. LLNL-CONF-678165. (23%).

[7] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Tom Arsenlis, and Nancy M. Amato. Load Balancing N-Body Simulations with Highly Non-Uniform Density. In *International Conference on Supercomputing (ICS'14)*, Munich, Germany, June 10-13, 2014. LLNL-CONF-648577. (21%).

[8] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Quantifying the Effectiveness of Load Balance Algorithms. In *International Conference on Supercomputing (ICS'12)*, Venice, Italy, June 25-29, 2012. LLNL-CONF-523343. (22%).

[9] Gabriel Tanase, Antal A. Buss, Adam Fidel, Harshvardhan, Ioannis Papadopoulos, **Olga Pearce**, Timmie G. Smith, Nathan Thomas, Xiabing Xu, Nedal Mourad, Jeremy Vu, Mauro Bianco, Nancy M. Amato, and Lawrence Rauchwerger. The STAPL Parallel Container Framework. In *ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)*, pages 235–246, 2011. (16%).

[10] Nathan Thomas, Gabriel Tanase, **Olga Tkachyshyn**, Jack Perdue, Nancy M. Amato, and Lawrence Rauchwerger. A Framework for Adaptive Algorithm Selection in STAPL. In *ACM SIGPLAN Principles and Practice of Parallel Programming (PPoPP)*, pages 277–288, 2005. (31%).

Refereed Publications in Conferences and Journals (additional)

[11] J. P. Dahm, D. F. Richards, A. Black, A. D. Bertsch, L. Grinberg, I. Karlin, S. Kokkila-Schumacher, E. A. Leon, R. Neely, R. Pankajakshan, and **Olga Pearce**. Sierra Center of Excellence: Lessons Learned. In *IBM Journal of Research and Development*, 2020. LLNL-JRNL-789080.

[12] Stephanie Brink, Ian Lumsden, Connor Scully-Allison, Katy Williams, **Olga Pearce**, Todd Gamblin, Michela Taufer, Katherine E. Isaacs, and Abhinav Bhatele. Usability and Performance Improvements in Hatchet. In *SC'20 ProTools Workshop*, Nov 2020. LLNL-CONF-814318.

[13] David Alexander Beckingsale, Jason Burmark, Rich Hornung, Holger Jones, William Killian, Adam J. Kunen, **Olga Pearce**, Peter Robinson, Brian S. Ryujin, and Thomas R. W. Scogland. RAJA: Portable Performance for Large-Scale Scientific Applications. In *SC'19 P3HPC Workshop*, 2019. LLNL-CONF-788757.

[14] **Olga Pearce**. Exploring Utilization Options of Heterogeneous Architectures for Multi-Physics Simulations. In *Parallel Computing Journal*, May 2019. LLNL-JRNL-762237.

[15] Alexandre Bergel, Abhinav Bhatele, David Boehme, Patrick Gralka, Kevin Griffin, Marc-Andre Hermanns, Dusan Okanovic, **Olga Pearce**, and Tom Vierjahn. Visual Analytics Challenges in Analyzing Calling Context Trees. In *Workshop on Visual Performance Analysis (VPA 18) at SC18*, November 2018. LLNL-CONF-756548.

[16] **Olga Pearce**. Experiences Using CPUs and GPUs for Cooperative Computation in a Multi-Physics Simulation. In *Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2 2018) at the International Conference on Parallel Processing (ICPP 2018) Conference*, August 2018. LLNL-CONF-738086.

[17] **Olga Pearce**, Hadia Ahmed, Rasmus W. Larsen, and David F. Richards. Enabling Work Migration in CoMD to Study Dynamic Load Imbalance Solutions. In *Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS'16) held as part of ACM/IEEE International Conference for High Performance Computing, Networking, Storage, and Analysis (SC'16)*, Salt Lake City, Utah, USA, November 13, 2016. LLNL-CONF-704368. (22%).

[18] Antal A. Buss, Harshvardhan, Ioannis Papadopoulos, **Olga Pearce**, Timmie G. Smith, Gabriel Tanase, Nathan Thomas, Xiabing Xu, Mauro Bianco, Nancy M. Amato, and Lawrence Rauchwerger. STAPL: Standard Template Adaptive Parallel Library. In *3rd Annual Haifa Experimental Systems Conference (SYSTOR)*, 2010.

[19] Gabriel Tanase, Xiabing Xu, Antal A. Buss, Harshvardhan, Ioannis Papadopoulos, **Olga Pearce**, Timmie G. Smith, Nathan Thomas, Mauro Bianco, Nancy M. Amato, and Lawrence Rauchwerger. The STAPL pList. In *22nd International Workshop on Languages and Compilers for Parallel Computing (LCPC)*, pages 16–30, 2009.

Unrefereed Publications and Technical Reports

[20] **Olga Pearce**. Caliper, SPOT, and Hatchet: Enabling the Whys and the Wherefores of Personal Analysis. In *CASC Newsletter*, June 2020.

[21] **Olga Pearce**. What if Components of Your Multiphysics Simulation Need to Use Your Heterogeneous Machine Differently? In *Nuclear Explosives Code Development Conference (NECDC) and Journal of Weapons Physics (JWP)*, January 2019. LLNL-PROC-765162.

[22] **Olga Pearce**. Impact of Mesh Decomposition on Performance of Teton. In *Nuclear Explosives Code Development Conference (NECDC)*, January 2017. LLNL-PROC-718463.

[23] Richard Hornung, **Olga Pearce**, Adam Kunen, Jeff Keasler, Holger Jones, Rob Neely, and Todd Gamblin. Demonstrating Advances in Proxy Applications Through Performance Gains and/or Performance Portable Abstractions: CoMD and Kripke with RAJA. In *SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP)*, March 2016. LLNL-TR-677453.

[24] Rasmus Wriedt Larsen and **Olga Pearce**. Enabling Load Balancing in CoMD through Overdecomposition. Technical Report LLNL-TR-678978, Lawrence Livermore National Laboratory, November 2015.

[25] Rich Hornung, Holger Jones, Jeff Keasler, Rob Neely, **Olga Pearce**, Si Hammond, Christian Trott, Paul Lin, Courtenay Vaughan, Jeanine Cook, Mahesh Rajan, Rob Hoekstra, Ben Bergen, Josh Payne, and Geoff Womeldorff. ASC Tri-lab Co-design Level 2 Milestone Report. Technical Report LLNL-TR-677453, Lawrence Livermore National Laboratory, Sandia National Laboratories, Los Alamos National Laboratory, September 2015.

[26] Anna Tikhonova, Gabriel Tanase, **Olga Tkachyshyn**, Nancy M. Amato, and Lawrence Rauchwerger. Parallel algorithms in STAPL: Sorting and the selection problem. Technical Report TR05-005, Parasol Lab, Department of Computer Science, Texas A&M University, August 2005.

[27] Jie Liu, **Olga Tkachyshyn**, Cory Kissinger, and Brian McGee. Teaching parallel programming and building parallel computers. In *International Conference on Frontiers in Education: Computer Science and Computer Engineering*, pages 149–155, June 2005.

[28] **Olga Tkachyshyn**, Ping An, Gabriel Tanase, and Nancy M. Amato. pArray as an efficient static parallel container in STAPL. Technical Report TR03-003, Parasol Lab, Department of Computer Science, Texas A&M University, August 2003.

Ph.D. Dissertation

[29] **Olga Pearce**. *Load Balancing Scientific Applications*. PhD thesis, Texas A&M University, College Station, TX, December 2014. LLNL-TH-663256.

Posters and Presentations

[30] Suraj P. Kesavan, Harsh Bhatia, Abhinav Bhatele, Stephanie Brink, **Olga Pearce**, Todd Gamblin, Peer-Timo Bremer, and Kwan-Liu Ma. Scalable Comparative Visualization of Ensembles of Call Graphs using CallFlow. In *SC'20*, November 2020. LLNL-POST-813361.

[31] Stephanie Brink and **Olga Pearce**. Tutorial: Performance Analysis with Hatchet. Lawrence Livermore National Laboratory, August 2020. LLNL-PRES-813307.

[32] **Olga Pearce**. Updates on Halo Exchange on Sierra. In *Summit on Summit and Sierra*, NVIDIA, April 15, 2020. LLNL-PRES-808639.

[33] **Olga Pearce**. Application teams feedback on performance tools. In *CORAL 2 Quarterly Meeting*, March 25, 2020. LLNL-PRES-807675.

[34] Stephanie Brink, Abhinav Bhatele, Todd Gamblin, and **Olga Pearce**. Hatchet: Prunning the Overgrowth in Parallel Profiles. In *JOWOG 34 Applied Computer Science*, Lawrence Livermore National Laboratory, February 24-27, 2020.

[35] **Olga Pearce**. Comb: Buffer Packing and Halo Exchange on Sierra. In *Summit on Summit and Sierra*, NVIDIA, December 9, 2019. LLNL-PRES-798671.

[36] **Olga Pearce**. Comb: Halo Exchange on Sierra. In *Summit on Summit and Sierra*, NVIDIA, August 12, 2019. LLNL-PRES-795917.

[37] **Olga Pearce**. Experiences putting Tools into Production Codes. In *Salishan Conference on High Speed Computing*, April 22-25, 2019. LLNL-PRES-766343.

[38] **Olga Pearce**. LLNL Sierra: The Software Stack Propelling Simulations to Exascale. In *GPU Technology Conference (GTC)*, San Jose, CA, USA, March 18-21, 2019.

[39] David Eberius, Kewen Meng, and **Olga Pearce**. Improving GPU Utilization through Kernel Execution Overlap. In *JOWOG 34 Applied Computer Science*, Los Alamos National Laboratory, January 28-21, 2019. LLNL-POST-755394.

[40] **Olga Pearce**. Experiences putting Tools into Production Codes. In *CASC WIP series*, Lawrence Livermore National Laboratory, January, 2019. LLNL-PRES-766343.

[41] **Olga Pearce**. Exploring different modes of utilizing Sierra for multiphysics codes. In *Computation External Review Committee*, Lawrence Livermore National Laboratory, August 28-30, 2018. LLNL-PRES-756603.

[42] **Olga Pearce**. Understanding performance of simulations on heterogeneous supercomputers. In *Visualizing Systems and Software Performance (VSSP) GI-Dagstuhl seminar for young researchers*, Dagstuhl, Germany, July 9-13, 2018. LLNL-PRES-753268.

[43] **Olga Pearce**. Acceleration of HPC applications on hybrid CPU-GPU systems: When can Multi-Process Service (MPS) help? In *GPU Technology Conference (GTC), Featured Speaker*, San Jose, CA, USA, March 26-29, 2018. LLNL-PRES-746880.

[44] **Olga Pearce**. Methodology for analyzing the performance of multiphysics codes on heterogeneous architectures. In *JOWOG 34 Applied Computer Science*, Sandia National Laboratories, Albuquerque, NM, February 12-16, 2018. LLNL-PRES-745558.

[45] **Olga Pearce**. Experiences Utilizing CPUs and GPUs for Computation Simultaneously on a Heterogeneous Node. In *DOE COE Performance Portability Meeting*, Denver, CO, USA, August 24, 2017. LLNL-PRES-737016.

[46] **Olga Pearce**, Hadia Ahmed, Rasmus W. Larsen, and David F. Richards. Enabling Work Migration in CoMD to Study Dynamic Load Imbalance Solutions. In *JOWOG 34 Applied Computer Science*, Livermore, CA, USA, February 10, 2017. LLNL-PRES-708520.

[47] David Beckingsale, **Olga Pearce**, and Todd Gamblin. Lightweight, Reusable Models for Dynamically Tuning Data-Dependent Code. In *SC'16*, Salt Lake City, UT, November 2016.

[48] David Boehme, Todd Gamblin, Peer-Timo Bremer, **Olga Pearce**, and Martin Schulz. Caliper: Composite Performance Data Collection in HPC Codes. In *SC'15*, Austin, TX, November 2015.

[49] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Improving Application Performance Through Affordable Load Balancing. In *Grace Hopper Conference*, Houston, TX, October 14, 2015. LLNL-POST-667498.

[50] Rich Hornung, Holger Jones, Jeff Keasler, Rob Neely, **Olga Pearce**, Si Hammond, Christian Trott, Paul Lin, Courtenay Vaughan, Jeanine Cook, Mahesh Rajan, Rob Hoekstra, Ben Bergen, Josh Payne, and Geoff Womeldorff. ASC Tri-lab Co-design Level 2 Milestone Report. September 2015. LLNL-TR-677453.

[51] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Improving Application Performance Through Affordable Load Balancing. In *LLNL Computation*

Directorate External Review Committee Meeting, Livermore, CA, March 10, 2015. LLNL-POST-667498.

[52] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Decoupled Load Balancing. In *Symposium on Principles and Practice of Parallel Programming (PPoPP)*, San Francisco, CA, February 8, 2015. LLNL-CONF-665393, LLNL-POST-666820.

[53] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Tom Arsenlis, and Nancy M. Amato. Load Balancing N-Body Simulations with Highly Non-Uniform Density. In *JOWOG 34 Applied Computer Science*, Albuquerque, NM, February 4, 2015. LLNL-PRES-666427.

[54] **Olga Pearce**. Load Balancing Scientific Applications. In *SC'14 Doctoral Showcase*, New Orleans, LA, November 20, 2014. LLNL-MI-657788, LLNL-PRES-664457. (36%).

[55] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Tom Arsenlis, and Nancy M. Amato. Load Balancing N-Body Simulations with Highly Non-Uniform Density. In *Postdoc Poster Symposium*, Livermore, CA, July 9, 2014. LLNL-POST-653183.

[56] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Tom Arsenlis, and Nancy M. Amato. Load Balancing N-Body Simulations with Highly Non-Uniform Density. In *Parasol Seminar*, College Station, TX, June 20, 2014. LLNL-PRES-654858.

[57] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Tom Arsenlis, and Nancy M. Amato. Load Balancing N-Body Simulations with Highly Non-Uniform Density. In *Salishan Conference on High Speed Computing*, Gleneden Beach, Oregon, April 23, 2014. LLNL-POST-653183.

[58] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Interaction-Based Load Balancing in N-Body Simulations. In *Postdoc Poster Symposium*, Livermore, CA, June 20, 2013. LLNL-POST-639346.

[59] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Interaction-Based Load Balancing in N-Body Simulations. In *Emerging Technologies in HPC Software Development*, Livermore, CA, June 12, 2013. LLNL-PRES-638872.

[60] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Quantifying the Effectiveness of Load Balance Algorithms. In *Salishan Conference on High Speed Computing*, Gleneden Beach, Oregon, April 25, 2012. LLNL-POST-548645.

[61] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Quantifying the Effectiveness of Load Balance Algorithms. In *Parasol Seminar*, Texas A&M University, College Station, TX, February 10, 2012. LLNL-PRES-527851.

[62] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. A Topology-aware Application-independent Load Model for Parallel Codes. In *Stockpile Stewardship Support Project Workshop (SSSP)*, Texas A&M University, College Station, TX, November 10, 2011. LLNL-POST-507591.

[63] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. A Topology-aware Application-independent Load Model for Parallel Codes. In *LLNL Lawrence Scholar Poster Session (LSP)*, Livermore, CA, October 25, 2011. LLNL-POST-507591.

[64] **Olga Pearce**, Todd Gamblin, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Load Balance: Correlating Application-Independent Measurements with Application-Semantic Computational Models. In *Supercomputing 2010 (SC'10)*, New Orleans, LA, November 16, 2010. LLNL-POST-461997.

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