

Journal Papers

- [1] M. BUßLER, P. DIEHL, D. PFLÜGER, S. FREY, F. SADLO, T. ERTL, AND M. A. SCHWEITZER, *Visualization of Fracture Progression in Peridynamics*, Computer & Graphics, 67 (2017), pp. 45–57.
- [2] G. DAIß, P. AMINI, J. BIDDISCOMBE, P. DIEHL, J. FRANK, K. HUCK, H. KAISER, D. MARCELLO, D. PFANDER, AND D. PFÜGER, *From piz daint to the stars: Simulation of stellar mergers using high-level abstractions*, in Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis, SC '19, New York, NY, USA, 2019, ACM, pp. 62:1–62:37.
- [3] R. DELORME, P. DIEHL, I. TABIAI, L. L. LEBEL, AND M. LÉVESQUE, *Extracting constitutive mechanical parameters in linear elasticity using the virtual fields method within the ordinary state-based peridynamic framework*, Journal of Peridynamics and Nonlocal Modeling, (2020).
- [4] P. DIEHL, F. FRANZELIN, D. PFLÜGER, AND G. C. GANZENMÜLLER, *Bond-based peridynamics: a quantitative study of Mode I crack opening*, International Journal of Fracture, 2 (2016), pp. 157–170.
- [5] P. DIEHL, S. PRUDHOMME, AND M. LÉVESQUE, *A review of benchmark experiments for the validation of peridynamics models*, Journal of Peridynamics and Nonlocal Modeling, 1 (2019), pp. 14–35.
- [6] P. DIEHL, I. TABIAI, F. W. BAUMANN, D. THERRIault, AND M. LEVESQUE, *Long term availability of raw experimental data in experimental fracture mechanics*, Engineering Fracture Mechanics, 197 (2018), pp. 21–26.
- [7] I. TABIAI, G. TKACHEV, P. DIEHL, S. FREY, T. ERTL, D. THERRIault, AND M. LÉVESQUE, *Hybrid image processing approach for autonomous crack area detection and tracking using local digital image correlation results applied to single-fiber interfacial debonding*, Engineering Fracture Mechanics, 216 (2019).

Series- and conference contributions

- [1] P. DIEHL, M. BUßLER, D. PFLÜGER, S. FREY, T. ERTL, F. SADLO, AND M. A. SCHWEITZER, *Extraction of Fragments and Waves After Impact Damage in Particle-Based Simulations*, Springer International Publishing, Cham, 2017, pp. 17–34.
- [2] P. DIEHL AND M. A. SCHWEITZER, *Efficient neighbor search for particle methods on GPUs*, in Meshfree Methods for Partial Differential Equations VII, M. Griebel and M. A. Schweitzer, eds., vol. 100 of Lecture Notes in Computational Science and Engineering, Springer, 2014, pp. 81–95.
- [3] ———, *Simulation of wave propagation and impact damage in brittle materials using peridynamics*, in Recent Trends in Computational Engineering – CE2014, M. Mehl, M. Bischoff, and M. Schäfer, eds., vol. 105 of Lecture Notes in Computational Science and Engineering, Springer, 2015, pp. 251–265.

- [4] P. DIEHL, M. SESHADRI, T. HELLER, AND H. KAISER, *Integration of cuda processing within the c++ library for parallelism and concurrency (hpx)*, in 2018 IEEE/ACM 4th International Workshop on Extreme Scale Programming Models and Middleware (ESPM2), Nov 2018, pp. 19–28.
- [5] F. FRANZELIN, P. DIEHL, AND D. PFLÜGER, *Non-intrusive uncertainty quantification with sparse grids for multivariate peridynamic simulations*, in Meshfree Methods for Partial Differential Equations VII, M. Griebel and M. A. Schweitzer, eds., vol. 100 of Lecture Notes in Computational Science and Engineering, Springer International Publishing, 2014, pp. 115–143.
- [6] T. HELLER, P. DIEHL, Z. BYERLY, J. BIDDISCOMBE, AND H. KAISER, *HPX – An open source C++ Standard Library for Parallelism and Concurrency*, in Proceedings of OpenSuCo 2017, Denver, Colorado USA, November 2017 (OpenSuCo 17), 2017, p. 5.
- [7] T. HELLER, H. KAISER, P. DIEHL, D. FEY, AND M. A. SCHWEITZER, *Closing the Performance Gap with Modern C++*, in High Performance Computing: ISC High Performance 2016 International Workshops, ExaComm, E-MuCoCoS, HPC-IODC, IXPUG, IWOPH, P³MA, VHPC, WOPSSS, Frankfurt, Germany, June 19–23, 2016, Revised Selected Papers, M. Tauber, B. Mohr, and J. M. Kunkel, eds., vol. 9945 of Lecture Notes in Computer Science, Springer International Publishing, 2016, pp. 18–31.
- [8] G. LABERGE, S. SHIRZAD, P. DIEHL, H. KAISER, S. PRUDHOMME, AND A. S. LEMOINE, *Scheduling optimization of parallel linear algebra algorithms using supervised learning*, in 2019 IEEE/ACM Workshop on Machine Learning in High Performance Computing Environments (MLHPC), Nov 2019, pp. 31–43.
- [9] K. SCHATZ, C. MÜLLER, P. GRALKA, M. HEINEMANN, A. STRAUB, C. SCHULZ, M. BRAUN, T. RAU, M. BECHER, P. DIEHL, ET AL., *Visual analysis of structure formation in cosmic evolution*, in 2019 IEEE Scientific Visualization Conference (SciVis), IEEE, 2019, pp. 33–41.
- [10] R. TOHID, B. WAGLE, S. SHIRZAD, P. DIEHL, A. SERIO, A. KHEIRKHAHAN, P. AMINI, K. WILLIAMS, K. ISAACS, K. HUCK, S. BRANDT, AND H. KAISER, *Asynchronous execution of python code on task-based runtime systems*, in 2018 IEEE/ACM 4th International Workshop on Extreme Scale Programming Models and Middleware (ESPM2), Nov 2018, pp. 37–45.
- [11] T. ZHANG, S. SHIRZAD, P. DIEHL, R. TOHID, W. WEI, AND H. KAISER, *An introduction to hpxmp: A modern openmp implementation leveraging hpx, an asynchronous many-task system*, in Proceedings of the International Workshop on OpenCL, IWOCCL'19, New York, NY, USA, 2019, ACM, pp. 13:1–13:10.

Technical reports

- [1] P. DIEHL, R. LIPTON, AND M. A. SCHWEITZER, *Numerical verification of a bond-based softening peridynamic model for small displacements: Deducing material parameters from classical linear theory*, tech. rep., Institut für Numerische Simulation, 2016.

Invited talks and Presentations

- [1] P. DIEHL, *Efficient k-nearest neighbor search on the GPU*. Seventh International Workshop Meshfree Methods for Partial Differential Equations, 09.09-11.09 2013, Bonn, Germany.
- [2] —, *Coupling CPU and GPU to simulate efficient dynamic cracks and fractures in solids*. 12th U.S. National Congress on Computational Mechanics (USNCCM12), 21.07-25.07 2013, Reilagh, US.
- [3] —, *Simulation of high-speed velocity impact on ceramic materials using the Peridynamic technique*. III International Conference on Particle-Based Methods. Fundamentals and Applications. Particles 2013, 18.09-20.09 2013, Stuttgart, Germany.
- [4] —, *Simulation of wave propagation and impact damage in brittle materials using the peridynamics technique*. 11th. World Congress on Computational Mechanics (WCCM XI), 20.07-25.07 2014, Barcelona, Spain.
- [5] —, *Sensitivity study for wave propagation and impact damage in brittle materials using peridynamics*. ASME International mechanical Engineering Congress and Exposition, 14.11-20.11 2014, Montreal, Canada.
- [6] —, *Efficient particle-based simulation of dynamic cracks and fractures in ceramic material*. GPU Technology Conference 2014, 24.03-27.03 2014, San Francisco, US.
- [7] —, *Simulation of wave propagation and impact damage in brittle materials using the peridynamics technique*. 3rd Workshop on Computational Engineering, 06.10-10.10 2014, Stuttgart, Germany.
- [8] —, *A sensitivity study for critical traction in quasi-static peridynamics simulations*. 1st. PAN-American Congress on Computational Mechanics, 27.04-30.04 2015, Buenos Aires, Argentina.
- [9] —, *A benchmark study for mode I crack opening for brittle materials*. 13th US National Congress on Computational Mechanics (USNCCM), 26.07-30.07 2015, San Diego, US.
- [10] —, *Energy equivalence for the horizon independent bond-based peridynamic softening model according to classical theory*. The Mathematics of Finite Elements and Applications 2016 (MAFELAP), 14.06-17.06 2016, London, UK.
- [11] —, *Numerical Validation of the bond-based Softening Model*. SIAM Mathematical Aspects of Material Science 2016, 07.05-12.05 2016, Philadelphia, US.
- [12] —, *Visualization of Fragments, Stress and Fracture Progression in Peridynamics*. Iso-geometric Analysis and Meshfree Methods, 10.10-12.10 2016, San Diego, USA.
- [13] —, *Modeling ductile materials with bond-based softening peridynamic model*. 12th. World Congress on Computational Mechanics (WCCM XII), 24.07-29.07 2016, Seoul, Korea.
- [14] —, *Modeling and simulation of crack and fractures with peridynamics in brittle materials*. HIM Junior Seminar, 08.02. 2017, Bonn, Germany.

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- [15] —, *Experimental Validation of Elastic State Based Peridynamic for PMMA and epoxy materials*. 14th U.S. National Congress on Computational Mechanics (USNCCM14), 17.07-20.07 2017, Montreal, Canada.
 - [16] —, *A Review for Benchmark Experiments against Peridynamic Models*. Nonlocal Methods in Fracture, 15.01-16.01 2018, Austin, USA.
 - [17] —, *Integration of CUDA Processing within the C++ library for parallelism and concurrency (HPX)*. IEEE/ACM 4th International Workshop on Extreme Scale Programming Models and Middleware (ESPM2'18), 12.11-16.11 2018, Dallas, USA.
 - [18] —, *Extracting constitutive mechanical parameters in linear elasticity using the virtual fields method within the ordinary state-based peridynamics framework*. Optimization days 2018, 07.05-09.05 2018, Montreal, Canada.
 - [19] —, *A Review for Benchmark Experiments against Peridynamic Models*. 13th. World Congress on Computational Mechanics (WCCM XIII), 23.07-27.07 2018, New York City, US.
 - [20] —, *Extracting constitutive mechanical parameters in linear elasticity using the virtual fields method within the ordinary state-based peridynamics framework*. 18th U.S. National Congress for Theoretical and Applied Mechanics, 04.06-09.06 2018, Rosemont, US.
 - [21] —, *Computational Analysis of Coupling Methods for Classical Continuum Mechanics and Peridynamics Models*. 15th U.S. National Congress on Computational Mechanics (USNCCM15), 28.07-01.08 2019, Austin, USA.
 - [22] —, *Implementation of Peridynamics utilizing HPX—the C++ standard library for parallelism and concurrency*. Engineering Mechanics Institute Conference, 18.06-21.06 2019, Pasadena, USA.
 - [23] —, *An overview for coupling finite elements with peridynamics*. International Congress on Industrial and Applied Mathematics, 15.07-19.07 2019, Valencia, Spain.
 - [24] —, *Long term availability of raw experimental data in experimental fracture mechanics*. Scientific Computing Around Louisiana (SCALA), 07.02-08.02. 2020, Baton Rouge, USA.

Posters

- [1] P. DIEHL, *Applying Tools and Techniques from Software Engineering in Computational Mechanics*. 12th U.S. National Congress on Computational Mechanics (USNCCM12), 21.07-25.07 2013, Raleigh, US.
- [2] —, *Numerical verification of the bond-based peridynamic softening model against classical theory*. Nonlocal Models in Mathematics, Computation, Science, and Engineering, 26.11-28.11 2015, Oak Ridge, US.

Theses

- [1] P. DIEHL, *Implementierung eines Peridynamik-Verfahrens auf GPU*, Diplomarbeit, Institute of Parallel and Distributed Systems, University of Stuttgart, 2012.
- [2] ———, *Modelling and Simulation of cracks and fractures with peridynamics in brittle materials*, Doktorarbeit, University of Bonn, 2017.

Preprints

- [1] P. DIEHL, P. K. JHA, H. KAISER, R. LIPTON, AND M. LEVESQUE, *Implementation of Peridynamics utilizing HPX—the C++ standard library for parallelism and concurrency*, arXiv preprint arXiv:1806.06917, (2018).

Raw experimental data

- [1] I. TABIAI, R. DELORME, P. DIEHL, L. L. LEBEL, AND M. LEVESQUE, *PMMA 3 point bending test until failure loaded in displacement*, Feb. 2018.