ALE3D Papers and Presentations

Author	Paper/Article	Date	Publication No.	Presented/Published
Austin, R.A., Barton, N.R., Reaugh, J.E., and Fried, L.E.	Direct numerical simulation of shear localization and decomposition reactions in shock-loaded HMX crystal	2015 May 14		Journal of Applied Physics, Vol. 117, No. 18, 185902 (2015)
Boley, C.D., Khairallah, S.A., and Rubenchik, A.M.	Calculation of laser absorption by metal powders in additive manufacturing	2015 Mar		Applied Optics, Vol. 54, Iss. 9, pp. 2477-2482 (2015)
Barton, N.R., Bernier, J.V., Lebebsohn, R.A., Boyce, D.E.	The use of discrete harmonics in direct multi-scale embedding of polycrystal plasticity	2015 Jan 1		Computer Methods in Applied Mechanics and Engineering, Vol. 283, pp. 224-242
King, W., Anderson, A.T., Ferencz, R.M., Hodge, N.E., Kamath, C., and Khairallah, S.A.,	Overview of modelling and simulation of metal powder–bed fusion process at Lawrence Livermore National Laboratory	2014 Dec		Materials Science and Technology (2014)
Khairallah, S.A., and Anderson, A.	Mesoscopic simulation model of selective laser melting of stainless steel powder	2014 Nov		Journal of Materials Processing Technology, Vol. 214, Issue 11, pp. 2627-2636
Puso, M.A., Kokko, E., Settgast, R., Sanders, J., Simpkins, B., and Liu, B.	An embedded mesh method using piecewise constant multipliers with stabilization: mathematical and numerical aspects	2014 Oct 22		International Journal for Numerical Methods in Engineering (Online Early View: to be published)

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Barton, N.R., Rhee, M., Li, S.F., Bernier, J.V., Kumar, M., Lind, J.F., Bingert, J.F.	Using high energy diffraction microscopy to assess a model for microstructural sensitivity in spall response	2014		Journal of Physics: Conference Series, Vol. 500, Part 11, 112007
Austin, R.A., Barton, N.R., Howard, W.M., and Fried, L.E.	Modeling pore collapse and chemical reactions in shock-loaded HMX crystals	2014		Journal of Physics: Conference Series, Vol. 500, Part 5, 05202
McClelland, M.A., Glascoe, E.A., Nichols, A.L., Schofield, S.P., Springer, H.K.	ALE3D Simulation of Incompressible Flow, Heat Transfer, and Chemical Decomposition of Comp B in Slow Cookoff Experiments	2014 Jun 23	LLNL-CONF-656112	International Detonation Symposium, San Francisco, CA, United States July 13-18, 2014
Barton, N.R., Rhee, M.,	A multiscale strength model for tantalum over an extended range of strain rates	2013 Sept		J. Appl. Phys., Vol. 114, No. 12, 123507 (2013)
Tringe, J.W., Kercher, J.R., Springer, H.K., Glascoe, E.A., Levie, H.W., Hsu, P., Willey, T. M. and Molitoris, J. D.	Numerical and experimental study of thermal explosions in LX-10 and PBX 9501: influence of thermal damage on deflagration processes	2013 July		J. Appl. Phys., Vol. 114, 043504 (2013)
Rhee, M., Bernier, J.V., Li, S.F., Bingert, J., Lind, J., and Barton, N.R.,	Model Validation for Microstructural Sensitivities Using High Energy Diffraction Microscopy	2013 July		TMS ICME, 2nd World Congress on Integrated Computational Materials Engineering, 2013

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Banks, J.W., Henshaw, W.D., and Sjogreen, B.	A stable FSI algorithm for light rigid bodies in compressible flow	2013 July 15		Journal of Computational Physics, Vol. 245, pp. 399–430 (2013)
Reaugh, J.E., Curtis, J.P., Maheswaran, M.A.	Computer simulations to study the effects of explosive and confinement properties on the deflagration-to-detonation transition (DDT)	2013 July	LLNL-PROC-639618	Proceedings of the American Physical Society Topical Group Meeting on Shock Compression of Condensed Matter, Seattle, WA, July 7-12, 2013
White, B.W., Springer, H.K., and Reaugh J.E.	Computational studies of the skid test: Evaluation of the non-shock ignition of LX-10 using HERMES	2013 July		Proceedings of the American Physical Society Topical Group Meeting on Shock Compression of Condensed Matter, Seattle, WA, July 7-12, 2013 Journal of Physics: Conference Series 500, (2014) 192021
Springer, H.K., Tarver C.M., Reaugh J.E., and May, C.M.	Investigating short-pulse shock initiation in HMX-based explosives with reactive meso-scale simulations	2013 July		Proceedings of the American Physical Society Topical Group Meeting on Shock Compression of Condensed Matter, Seattle, WA, July 7-12, 2013 Journal of Physics: Conference Series 500, (2014) 052041
Reaugh, J.E.,	HERMES Model Modifications and Applications 2012	2013 Apr 17	LLNL-TR-635400	
Barton, N.R., Arsenlis, A., Marian, J.,	A polycrystal plasticity model of strain localization in irradiated iron	2013 Feb		Journal of the Mechanics and Physics of Solids, Vol. 61, No. 2, pp. 341–351 (2013)

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Banks, J.W. and Sjogreen, B.	Stability of Finite Difference Discretizations of Multi-Physics Interface Conditions	2013		Commun. Comput. Phys., Vol. 13, No. 2, pp. 386-410 (2013)
Puso, M.A., Sanders, J., Settgast, R., Liu, B.	An embedded mesh method in a multiple material ALE	2012 Feb 28	LLNL-JRNL-533451	Computer Methods in Applied Mechanics and Engineering Vol. 245–246, pp. 273–289 (Oct. 2012)
Barton, N.R., Bernier, J.V., Knap, J., Sunwoo, A.J., Cerreta, E., Turner, T.J.	A call to arms for task parallelism in multi-scale materials modeling	2011 May		International Journal for Numerical Methods in Engineering, Vol. 86, No. 6, pp. 744–764
Barton, N.R., Bernier, J.V., Edmiston, J.K.	Bringing Together Computational and Experimental Capabilities at the Crystal Scale	2009 Jul 29	LLNL-CONF-415155	Shock Compression of Condensed Matter 2009, Nashville, TN, United States June 28-July 3, 2009
Moss, W.C., King, M.J., Blackman, E.G.	Skull Flexure from Blast Waves: A Mechanism for Brain Injury with Implications for Helmet Design	2009 May 1	LLNL-JRNL-412717	Physical Review Letters Vol. 103, 108702
Barton, N.R., Winter, N.W., Reaugh, J.E.,	Defect evolution and pore collapse in crystalline energetic materials	2009 Apr		Modelling and Simulation in Materials Science and Engineering, Vol. 17, No. 3, 035003
Leininger, L., Springer, H.K., Mace, J., Mas, E.	Modeling The Shock Initiation of PBX-9501 in ALE3D	2008 Jul 8	LLNL-CONF-405174	MABS Conference, Oslo, Norway September 1-5, 2008

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Leininger, L., Springer, H.K., Mace, J., Mas, E.	Modeling Three-Dimensional Shock Initiation of PBX 9501 in ALE3D	2008 Jul 8	LLNL-CONF-405270	MABS Conference, Oslo, Norway September 1-5, 2008
Najjar, F.M., Solberg, J., White, D.	Verification Test Suite (VERTS) For Rail Gun Applications using ALE3D: 2-D Hydrodynamics & Thermal Cases	2008 Apr 25	LLNL-TR-403164	NECDC 2008, Livermore CA
Bernier, J.V., Barton, N.R., Knap, J.	Polycrystal Plasticity Based Predictions of Strain Localization in Metal Forming	2008 Mar		J. Eng. Mater. Technol., Vol. 130, No. 2, 021020 (Mar 27, 2008)
Barton, N.R., Knap, J., Arsenlis, A., Becker, R., Hornung, R.D., Jefferson, D.R.,	Embedded polycrystal plasticity and adaptive sampling	2008 Feb		International Journal of Plasticity, Vol. 24, No. 2, Pages 242–266
Howard, W.M., McClelland, M.A., Nichols, A.L.	ALE3D Simulations of Gap Closure and Surface Ignition for Cookoff Modeling	2006 Jun 23	UCRL-CONF-222367	13th International Detonation Symposium Norfolk, VA July 23 - 28, 2006
McClelland, M. A., Maienschein, J. L., Howard, W. M., deHaven, M. R.	ALE3D Simulation and Measurement of Violence in a Fast Cookoff Experiment for LX-10	2006 May 25	UCRL-CONF-221624	JANNAF APS-CS-PSHS-Joint Meeting San Diego, CA December 4 - 8, 2006
Riordan, T.E.	ALE3D Rolling Simulations	2006 Aug 3	UCRL-TR-223365	

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J. Knap, J., McClelland, M. A., Maienschein, J. L., Howard, W. M., Nichols, A. L., deHaven, M. R., Strand, O. T.	Measurement and ALE3D Simulation of Violence in a Deflagration Experiment With LX-10 and Aermet-100 Alloy	2006 Jun 27	UCRL-CONF-222438	13th International Detonation Symposium Norfolk, VA July 23 - 28, 2006
McClelland, M. A., Maienschein, J. L., Howard, W. M., Nichols, A. L., deHaven, M. R., Strand, O. T.	ALE3D Simulation of Heating and Violence in a Fast Cookoff Experiment with LX-10	2006 Jun 28	UCRL-CONF-222465	13th International Detonation Symposium Norfolk, VA July 23 - 28, 2006
Wemhoff, A. P., Burnham, A. K.	Comparison of the LLNL ALE3D and AKTS Thermal Safety Computer Codes for Calculating Times to Explosion in ODTX and STEX Thermal Cookoff Experiments	2006 Apr 19	UCRL-TR-220687	
Leininger, L.D.	Validation of Air-Backed Underwater Explosion Experiments with ALE3D	2005 Apr 14	UCRL-PRES-214937	
McClelland, M. A., Maienschein, J. L., Yoh, J.J., W. M., deHaven, M. R., Strand, O. T.	Measurements and ALE3D Simulations for Violence in a Scaled Thermal Explosion Experiment with LX-10 and AerMet 100 Steel	2005 Jun 10	UCRL-CONF-212828	Joint Army-Navy-NASA-Air Force 40th Combustion Subcommittee/28th Airbreathing Propulsion Subcommittee/22nd Propulsion Systems Hazards Subcommittee/4th Modeling & Simulation Subcommittee Meeting Charleston, SC June 13 - 17, 2005

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Nichols, A.L.	Species Diffusion in ALE3D	2005 Apr 6	UCRL-CONF-211116	NECDC 04 Livermore, CA October 4 - 7, 2004
McClelland, M. A., Maienschein, J. L., Reaugh, J.E., Tran, T.D., Nichols, A.L., Wardell, J.F.	ALE3D Model Predictions and Experimental Analysis of the Cookoff Response of Comp B*	2003 Dec 1	UCRL-CONF-201209	Joint Army Navy NASA Air Force (JANNAF) Meeting Colorado Springs, CO December 1 - 5, 2003
Nichols, A.L., Tarver, C.M., McGuire, E.M.	ALE3D Statistical Hot Spot Model Results for LX-17	2003 Jul 11	UCRL-JC-152203	American Physical Society Topical Conference on Shock Compression of Condensed Matter Portland, OR July 20-25, 2003
McClelland, M. A., Maienschein, J. L., Nichols, A.L., Wardell, J.F., Atwood, A.I., Curran, P.O.	ALE3D Model Predications and Materials Characterization for the Cookoff Response of PBXN-109	2002 Mar 19	UCRL-JC-145756	Joint Army Navy NASA Air Force 38'h Combustions Subcommittee, 26'h Airbreathing Propulsion Subcommittee, 20th Propulsion Systems Hazards Subcommittee and 2"d Modeling and Simulation Subcommittee Joint Meeting, Destin, FL April 8-12, 2002
Ortega, J.	Laminar Validation Cases for the Incompressible Flow Model in ALE3D	2002 Jul 16	UCRL-ID-149328	
McClelland, M. A., Tran, Cunningham, B.J., Weese, R.K., Maienschein, J. L.	Cookoff Response of PBXN-109: Material Characterization and ALE3D Thermal Predictions	2001 Aug 21	UCRL- JC-144009-REV-1	Insensitive Munitions & Energetic Materials Technology Symposium, Saint-Malo, France June 23 -27, 2003

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Gerassimenko, M.	Test Problems for Reactive Flow HE Model in the ALE3D Code and Limited Sensitivity Study	2000 Mar 1	UCRL-ID-138456	
McClelland, M. A., Tran, Cunningham, B.J., Weese, R.K., Maienschein, J. L.	Cookoff Response of PBXN-109: Material Characterization and ALE3D Model	2000 Oct 24	UCRL-JC-138878	JANNAF CS/APS/PSHS Joint Meeting, Monterey, CA November 13-17, 2000
Futral, W.S., Dube, E., Neely, J.R., Pierce, T.G.	Performance of ALE3D on the ASCI Machines	1999 Feb 8	UCRL-JC-132166	Nuclear Explosives Code Development Conference Las Vegas, Nevada October 25 - 30, 1998
Nichols, A.L., McCallen, R.C., Aro, C., Sharp, R., Neely, J.R.	Modeling Thermally Driven Energetic Response of High Explosives in ALE3D	1998 Oct	UCRL-JC-133140	Nuclear Explosives Code Development Conference, Las Vegas, NV Oct 25-30, 1998
Dube, E.	Performance of ALE3D on the ASCI machines - Abstract	1998	UCRL-JC-132166-ABS	
Couch, R., Faux, D.	Simulation of Underwater Explosion Benchmark Experiments with ALE3D	1997 May 19	UCRL-JC-123819	Workshop on Simulation of Underwater Explosion Phenomena, Dunfermline, Scotland May 27-29,1997

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