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Research Presentations

(version: 03. December, 2021)

I. Presentations at Conferences (presenter, other co-authored talks not listed)

1. Kiefer, B. (invited symposium speaker), *Recent Developments in the Computational Mechanics Based Modeling of Magnetic Shape Memory Alloys*, 26th International Congress of Mechanical Engineering (COBEM), Brazilian Society of Engineering and Mechanical Sciences (ABCM), Symposium of Smart Materials and Structures, Virtual Conference, 22-26 November, 2021.
2. Kiefer, B. Roth, S. Seupel, A., Prüger, S. and Rheinbach, O., *Chemo-Mechanics: Variational Settings and Numerical Aspects*, 91st GAMM Annual Meeting: Minisymposium DFG-PP 2256: Variational Methods for Predicting Complex Phenomena in Engineering Structures and Materials, Virtual Conference (Kassel, Germany), 15-19 March, 2021.
3. Kiefer, B., Roth, S., *On the Finite Element Implementation of Multi-Component Chemo-Mechanical Phase-Field Models*. 14th World Congress on Computational Mechanics (WCCM), Virtual Congress, 11-15 January, 2021.
4. Kiefer, B., Abendroth, M., Hein, J. and Ben Zineb, T., *Characterization of Iron-Based Shape Memory Alloys Under Multiaxial Loading Using a Miniaturized Test*. ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Development and Characterization of Multifunctional Materials, Virtual Conference, 15 September, 2020.
5. Kiefer, B. (invited), *Relaxation Schemes for Multi-Phase Magnetic Solids*. Workshop on the Mechanics of Materials: Towards Predictive Methods for Kinetics in Plasticity, Fracture, and Damage, Oberwolfach, Germany, 08-14 March, 2020.
6. Kiefer, B. (invited), *Computational Approaches to the Modeling of Multiferroic Solids with Evolving Microstructure.* ECCOMAS Thematic Conference: Computational Modeling of Complex Materials Across the Scales, Glasgow, UK, 1-4 October, 2019.
7. Kiefer, B., Hein, J., Abendroth, M., Biermann, H., Henkel, S., Weidner, A., Niendorf, T. and Krooß, P., *An Efficient Methodology to Characterize SMA Behavior Under Cyclic Bi-axial Loading Conditions Based on the Small Punch Test*. ASME 2019 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Development and Characterization of Multifunctional Materials: Shape Memory Alloys – Applications, Louisville, KY, USA, 09-11 September, 2019.
8. Kiefer, B., Bartel, T., Buckmann, K. and Menzel, A., *A Finite Element Framework for Magneto-Mechanical Simulations Considering Energy-Relaxing Microstructure Evolution*. 15th US National Congress on Computational Mechanics (USNCCM): Minisymposium on Computational Mechanics for Smart Materials: Modeling, Simulation and Experimental Validation, Austin, TX, USA, 28 July-1 August, 2019.
9. Kiefer, B., Bartel, T. and Menzel, A. (invited), *Local and Global Approaches to the Modeling of Magnetic Shape Memory Alloys*. IUTAM Symposium on Phase Transformation in Shape Memory Materials: Modeling and Applications, Austin, TX, USA, 28 April-02 May, 2019.
10. Kiefer, B., Hein, J., Abendroth, M., Biermann, H., Henkel, S., Niendorf, T., Krooß, P. and Chemisky, Y., 2018. *On the Potential of Using the Small Punch Test for the Characterization of SMA Behavior Under Multi-Axial Loading Conditions*. ASME 2018 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Development and Characterization of Multifunctional Materials: Shape Memory Alloys II, San Antonio, TX, USA, 10-12 September, 2018.
11. Kiefer, B. and Bartel, T., *On Relaxed Energy Potentials in Magnetomechanics*. 13th World Congress on Computational Mechanics and 2nd Pan American Congress on Computational Mechanics (WCCM 2018): Minisymposium on Smart Materials Across the Scales: Modeling, Experiments and Simulation, New York City, NY, USA, 22-27 July, 2018.

12. Kiefer, B. (invited), *Computational Mechanics of Coupled Problems: Field Equations and Constitutive Mechanisms*. 1st German-Brazilian Workshop on Computational Mechanics, Sao Paulo, Brazil, 19-20 February, 2018.
13. Kiefer, B., Bartel, T., *Homogenization Schemes for Magnetic Solids Based on Concepts of Energy Relaxation*. 3rd Seminar on Ferroic Functional Materials & 13th International Workshop on Direct and Inverse Problems in Piezoelectricity, Kassel, Germany, 4-6 October, 2017.
14. Kiefer, B. (invited symposium keynote), *Multi-Scale Modeling of Magnetomechanical Coupling Phenomena*. ASME 2017 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Modeling, Simulation and Control of Adaptive Systems: Damping and Stiffness Modeling, Snowbird, UT, USA, 18-20 September, 2017.
15. Kiefer, B., Bartel, T., *Novel Energy Relaxation-Based Homogenization Schemes for Multi-Phase Magnetic Solids*. ASME 2017 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Mechanics and Behavior of Active Materials: Morphing Structures, Snowbird, UT, USA, 18-20 September, 2017.
16. Kiefer, B. and Bartel, T., *On Variationally-Consistent Homogenization Approaches in Multi-Phase Magnetic Solids*, 88th GAMM Annual Meeting: Coupled Problems, Weimar, Germany, 6-10 March, 2017.
17. Kiefer, B., Buckmann, K., Bartel, T. and Menzel, A., *A Coupled FE-Framework Suitable for the Implementation of Incremental Energy Minimization-Based Magnetostriction Models*. ASME 2016 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Mechanics and Behavior of Active Materials: Magnetostrictive and Multiferroic Materials and Devices, Stowe, VT, USA, 28-30 September, 2016.
18. Kiefer, B., Waffenschmidt, T., Sprave, L. and Menzel, A. (session keynote), *A Comparison of Algorithmic Approaches to Damage-Plasticity Modeling in the Context of Gradient-Enhancement*, 87th GAMM Annual Meeting/DMV Annual Meeting: Damage and Fracture Mechanics, Braunschweig, Germany, 7-11 March, 2016.
19. Kiefer, B., Haldar, K. and Menzel, A. (session keynote), *Modeling, Simulation and Parameter Identification for Rate-Dependent Magnetoactive Polymer Response*, 86th GAMM Annual Meeting: Coupled Problems, Lecce, Italy, 23-27 March, 2015.
20. Kiefer, B., Buckmann, K., Bartel, T. and Menzel, A., *Modeling of Single Crystal Magnetostriction based on Numerical Energy Relaxation Techniques*. ASME 2014 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Modeling, Simulation and Control of Adaptive Systems: Magnetorheological Systems II, Newport, RI, USA, 08-11 September, 2014.
21. Kiefer, B., Buckmann, K., Bartel, T. and Menzel, A., *Modeling of Single Crystal Magnetostriction based on Numerical Energy Relaxation Techniques*. 11th World Congress on Computational Mechanics (WCCM XI), Barcelona, Spain, 20-25 July, 2014.
22. Kiefer, B., Hartl, D. J., Schulte, R. and Menzel, A., *Efficient Analysis of Anisotropic Shape Memory Alloy Response via Optimized Transformation Surfaces*. 85th GAMM Annual Meeting: Material Modelling in Solid Mechanics, Erlangen, Germany, 10-14 March, 2014.
23. Kiefer, B., Bartel, T., Buckmann, K. and Menzel, *An Advanced Energy Relaxation Scheme for the Modeling of Displacive Phase Transformations*, ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Modeling, Simulation and Control of Adaptive Systems: SMA Modeling and Characterization II, Snowbird, UT, USA, 16-18 September, 2013.
24. Kiefer, B., Bartel, T. and Menzel, A., *Extended Constitutive Integration Algorithms and Fully-Coupled Finite Element Analysis for Magnetic Shape Memory Response*, ASME 2012 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Mechanics and Behavior of Active Materials: SMA Constitutive Models, Stone Mountain, GA, USA, 19-21 September, 2012.
25. Kiefer, B., *Modeling and Simulation of Magnetostrictive Actuator Design Problems*, 13th International Conference on New Actuators (ACTUATOR 2012): B5: Magnetostrictive/MSM Actuators, Bremen, 18-20 June, 2012.
26. Kiefer, B., 2012 (invited session keynote), *Algorithmic Aspects of Magnetic Shape Memory Alloy Modeling*, 83rd GAMM Annual Meeting: Coupled Problems: Multifield Problems 3: Magnetomechanics, Darmstadt, Germany, 26-30 March, 2012.
27. Kiefer, B., *Numerical Implementation of a Return Mapping-Based Algorithmic Material Model for Magnetic Shape Memory Alloys*. ASME 2011 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Mechanics and Behavior of Active Materials, Scottsdale, AZ, USA, 18-21 September, 2011.

28. Haldar, K. and Kiefer, B. and Lagoudas, D. C., *Finite Element Analysis of Stress Inhomogeneities in MSMA Samples Caused by Magnetic Body Forces and Couples*, 3rd International Conference on Ferromagnetic Shape Memory Alloys (ICFSMA): Theory and Modelling, Dresden, Germany, 18-22 July, 2011.
29. Kiefer, B., *Fully-Coupled Finite Element Analysis of Magnetic Shape Memory Behavior*, 82nd GAMM Annual Meeting: Coupled Problems: Electro-Magneto Mechanics, Graz, Austria, 18-21 April, 2011.
30. Kiefer, B., Rosato, D. and Miehe, C., *An Incremental Variational Formulation of Dissipative Magnetostriction*, ASME 2010 on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS): Active Materials, Mechanics and Behavior: Magnetics II, Philadelphia, PA, USA, 28 September-1 October, 2010.
31. Kiefer, B., Rosato, D. and Miehe, C., *Computational Modeling of Materials Exhibiting Intrinsic Magnetomechanical Coupling at Finite Strains*, 3rd GACM Colloquium on Computational Mechanics, MS 06: Modelling and Simulation of Multifunctional Materials, Hannover, Germany, 21-23 September, 2009.
32. Kiefer, B., Rosato, D. and Miehe, C., *Geometrical Aspects of the Incorporation of Free Space in Magnetomechanics at Finite Strains*, 80th GAMM Annual Meeting: Coupled Problems, Gdańsk, Poland, 9-13 February, 2009.
33. Kiefer, B., Rosato, D. and Miehe, C., *Finite Element Analysis of General Magnetomechanical Coupling Phenomena*, 79th GAMM Annual Meeting: Coupled Problems: Simulation Technology for Coupled Problems, Bremen, Germany, 31 March-4 April, 2008.
34. Kiefer, B., Rosato, D. and Miehe, C., *Modeling and Computational Analysis of Materials Exhibiting Intrinsic Magnetomechanical Coupling*, 15th SPIE International Symposium: Smart Structures and Materials: Behavior and Mechanics of Multifunctional and Composite Materials II: Magnetostrictive Materials II, San Diego, CA, USA, 9-13 March, 2008.
35. Kiefer, B., *Modeling of the Nonlinear and Hysteretic Constitutive Response of Magnetic Shape Memory Alloys*, 9th U.S. National Conference on Computational Mechanics (USNCCM): Computational Methods for Solid-Solid Phase Transformations, San Francisco, CA, USA, 22-26 July, 2007.
36. Kiefer, B., Rosato, D. and Miehe, C. (invited session keynote), *On the Modeling of Thermo-Electro-Magneto-Mechanical Solids at Finite Strains*, 78th GAMM Annual Meeting at the 6th International Congress on Industrial and Applied Mathematics (ICIAM): Coupled Problems: Magnetomechanics, Zürich, Switzerland, 16-20 July, 2007.
37. Kiefer, B., *A Phenomenological Constitutive Model for Magnetic Shape Memory Alloys*, First Seminar on the Mechanics of Multifunctional Materials, Bad Honnef, Germany, 7-10 May, 2007.
38. Kiefer, B. and Lagoudas, D. C., *Modeling of the Variant Reorientation in Magnetic Shape Memory Alloys under Complex Magnetomechanical Loading*, 7th European Symposium on Martensitic Transformations and Shape Memory Alloys (ESOMAT), Bochum, Germany, 10-15 September, 2006.
39. Kiefer, B. and Lagoudas, D. C., *Application of a Magnetic SMA Constitutive Model in the Analysis of Magnetomechanical Boundary Value Problems*, 13th SPIE International Symposium: Smart Structures and Materials: Active Materials: Behavior and Mechanics: SMA and FSMA, San Diego, CA, USA, 26 February-2 March, 2006.
40. Kiefer, B. and Lagoudas, D. C., *Application of a Magnetic SMA Constitutive Model in the Analysis of Magnetomechanical Boundary Value Problems*, 2006 SPIE/ASME Best Student Paper Presentation Contest, 13th SPIE International Symposium: Smart Structures and Materials, San Diego, CA, USA, 26 February-2 March, 2006.
41. Kiefer, B. and Lagoudas, D. C., *Magneto-Mechanical Coupling in Boundary Value Problems Involving Magnetic Shape Memory Constitutive Behavior*, ASME International Mechanical Engineering Congress, Aerospace: Adaptive Materials and Systems: Shape Memory Materials II, Orlando, FL, USA, 5-11 November, 2005.
42. Kiefer, B. and Lagoudas, D. C., *Modeling of the Magnetic Field-Induced Martensitic Variant Reorientation and the Associated Magnetic Shape Memory Effect in MSMAs*, 12th SPIE International Symposium: Smart Structures and Materials: Active Materials: Behavior and Mechanics: SMA and FSMA, San Diego, CA, USA, 6-10 March, 2005.
43. Kiefer, B. and Lagoudas, D. C., *Modeling of the Magnetic Field-Induced Martensitic Variant Reorientation and the Associated Magnetic Shape Memory Effect in MSMAs*, 2005 SPIE/ASME Best Student Paper Presentation Contest, 12th SPIE International Symposium: Smart Structures and Materials, San Diego, CA, USA, 6-10 March, 2005.
44. Kiefer, B. and Lagoudas, D. C., *Phenomenological Modeling of Ferromagnetic Shape Memory Alloys*, SPIE 11th Annual International Symposium, Smart Structures and Materials: Active Materials: Behavior and Mechanics: Magnetic Shape Memory Alloys II, San Diego, CA, USA, 14-18 March, 2004.

45. Lagoudas, D. C., Karaman, I., Kiefer, B. and Entchev, P. B., *A Phenomenological Model for Magnetic Shape Memory Alloys with Hysteresis Effects*, ASME International Mechanical Engineering Congress, Applied Mechanics: Constitutive Relations of Advanced Materials: Shape Memory Alloys, Washington, D.C., USA, 15-21 November, 2003.

II. Invited Seminar Presentations

1. Kiefer, B., *Computational Multiscale Modeling of Multifunctional Materials*, Department of Mechanical and Aerospace Engineering, The Ohio State University, 11 May, 2021.
2. Kiefer, B., *Coupled Problems in Constitutive Modeling Across Various Length-Scales*, Department of Mechanical Engineering, University of Houston, 4 September, 2018.
3. Kiefer, B., *Coupled Problems in Constitutive Modeling Across Various Length-Scales*, Center for Intelligent Materials and Structures (CiMMS), Department of Aerospace Engineering, Texas A&M University, College Station, USA, 5 September, 2018.
4. Kiefer, B. *Coupled Problems in Constitutive Modeling Across Various Length-Scales*, Institute of Materials Simulation, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany, 18 July, 2018.
5. Kiefer, B., *Computational Mechanics for Coupled Problems in Constitutive Modeling*, ENSAM — Arts et Métiers ParisTech, Campus de Metz, France, 8 March, 2018.
6. Kiefer, B., *Computational Modeling of Magnetomechanical Coupling at Various Length-Scales*, Mechanik-Seminar, Universität Kassel, 2 March, 2017.
7. Kiefer, B., *Computational Modeling of Magnetomechanical Coupling at Various Length-Scales*, Klausurtagung TU Dresden, AG M. Kästner, Oberwiesenthal, 20 January, 2017.
8. Kiefer, B., *Continuum Modeling of Magnetostriction on Different Length Scales*, University of Oxford, Solid Mechanics and Materials Engineering, Oxford, UK, 13 March, 2015.
9. Kiefer, B., *On Thermodynamical Aspects of the Magnetic Shape Memory Effect*, DFG SPP 1599 Ferroic Cooling Focus Meeting, C: Elasto-Calorics, Universität des Saarlandes, Saarbrücken, 22-23 October, 2013.
10. Kiefer, B., *Modeling and Simulation of Magnetostrictive Response on Different Length-Scales*, Sandia National Laboratories, Albuquerque, USA, 12 September, 2013.
11. Kiefer, B., *An Introduction to the Modeling of Microstructure Evolution in Magnetizable Solids*, DFG-FOR 1509: Summer School Modeling, Kleinwalsertal, Austria, 22-26 July, 2013.
12. Kiefer, B., *Modeling and Simulation of Multifunctional Materials with Magnetic Coupling*, Aerospace & Ocean Engineering Department, Virginia Polytechnic Institute and State University, USA, 24 September, 2012.
13. Kiefer, B. und Menzel, A., *Modeling and Simulation of Active Polymers*, Institute of Polymer Product Engineering, Johannes Kepler Universität, Linz, Austria, 11 June, 2012.
14. Kiefer, B., *Modellierung und Simulation magnetischer Funktionsmaterialien*. Karlsruher Werkstoff-kolloquium, Karlsruhe Institute of Technology, Karlsruhe, Germany, 5 June, 2012.
15. Kiefer, B., *On the Modeling and Simulation of Multifunctional Materials exhibiting Magneto-Mechanical Coupling*. Laboratoire d'Energétique et de Mécanique Théorique et Appliquée (LEMTA), Nancy, France, 1 March, 2012.
16. Kiefer, B., *Aspect of Computational Magnetomechanics for Nonlinear Multifunctional Materials*, Istituto di Matematica Applicata e Tecnologie Informatiche (IMATI)- Consiglio Nazionale delle Ricerche (CNR)/ Dipartimento di Meccanica Strutturale, Università degli Studi di Pavia, Pavia, Italy, 4 October, 2011.
17. Kiefer, B., *An Introduction to the Mechanics of Functional Materials with a Particular Focus on Shape Memory Alloys*, Lecture Series at the Computational Mechanics of Materials and Structures (COMMAS) Summer School, Universität Stuttgart, Germany, 14-15 October, 2010.
18. Kiefer, B., *Computational Mechanics-Based Modeling of Functional Material Behavior*, JP Kolloquium: Mechanics of Functional Materials, TU Dortmund, Germany, 29 April, 2010.
19. Kiefer, B., *Theorie und Numerik der Kontinuumsmagnetomechanik (Theory and Numerics of Continuum Magnetomechanics)*, Seminar für Numerische Mathematik und Mechanik, Universität Duisburg-Essen, Campus Essen, Germany, 23 January, 2009.
20. Kiefer, B., *Theorie und Numerik der Kontinuums-Magneto-Mechanik (Theory and Numerics of Continuum Magnetomechanics)*, Kolloquium über Mechanik, Technische Universität Darmstadt, Germany, 10 December, 2008.

21. Kiefer, B., *Theory and Numerics of Continuum Magnetomechanics*. SimTech JP-Conference, Universität Stuttgart, Germany, 29-30 May, 2008.
22. Kiefer, B. and Lagoudas, D. C., *Modeling of the Variant Reorientation in Magnetic Shape Memory Alloys under Multi-Component Magnetomechanical Loading*, Mechanik Kolloquium Universität Dortmund, Germany, 8 September, 2006.
23. Kiefer, B. and Lagoudas, D. C., *Modeling of the Variant Reorientation in Magnetic Shape Memory Alloys under Multi-Component Magnetomechanical Loading*, Fraunhofer-Institut für zerstörungsfreie Prüfverfahren, Institutsteil Dresden, Germany, 4 September, 2006.