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**BIOGRAPHICAL SKETCH**


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NAME Ellen Kuhl	POSITION TITLE Assistant Professor of Mechanical Engineering and Bioengineering		
eRA COMMONS USER NAME			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Kaiserslautern, Germany	Habilitation	2004	Biomechanical Engineering
Delft University of Technology, The Netherlands	Post Doc	2000	Aerospace Engineering
University of Stuttgart, Germany	PhD	2000	Civil Engineering
Leibniz University of Hannover, Germany	Dipl Ing	1995	Computational Engineering

**A. Positions and Honors.****Positions and Employment**

2007-	Stanford University, Assistant Professor, Depts of Bioengineering and Mechanical Engineering Computational Mechanics, Biomechanics, Cardiovascular Mechanics, Cell Mechanics
2002-2006	TU Kaiserslautern, Germany, Assistant Professor, Department of Mechanical Engineering Biomechanics, Computational Mechanics, Growth and Remodeling of Hard and Soft Tissues
2001-2002	TU Kaiserslautern, Germany, Habilitation Researcher, Department of Mechanical Engineering Habilitation grant on Biomechanics by the German National Science Foundation, DFG
2000-2001	TU Delft, The Netherlands, Postdoctoral Scholar, Department of Aerospace Engineering Theory and numerics of fluid-structure-interaction-phenomena
1996-2000	University of Stuttgart, Germany, Graduate Researcher, Department of Civil Engineering PhD grant on Softening materials by the German National Science Foundation, DFG
1992-1996	University of Hannover, Germany, Graduate Researcher, Department of Civil Engineering Simulation of localization phenomena in polycrystals at large deformations

**Other Experience and Professional Memberships**

- **Reviewer:** International Journal for Numerical Methods in Engineering, International Journal of Engineering Science, Journal of Engineering Mechanics, International Journal of Solids and Structures, International Journal for Numerical and Analytical Methods in Geomechanics, Journal of the Mechanics and Physics of Solids, Biomechanics and Modeling in Mechanobiology, Zeitschrift fur Angewandte Mathematik und Mechanik, Computational Methods in Applied Mechanics and Engineering, Computational Mechanics, European Journal of Mechanics, Computer Methods in Biomechanics and Biomedical Engineering, Medical Engineering and Physics, Archive of Applied Mechanics, Philosophical Magazine, Journal of Biological Dynamics, Journal of Biomechanics, Journal of Applied Mechanics, Journal of the Mechanical Behavior of Biomedical Materials, Computational Materials Science, Continuum Mechanics and Thermodynamics, Encyclopedia of Computational Mechanics.
- **Reviewer:** National Science Foundation (NSF), German Science Foundation (DFG)
- **Guest editor:** "Computer simulations of mechanobiology" in Computer Methods in Biomechanics and Biomedical Engineering, "Mechanics in biology: Cells and tissues" in Philosophical Transactions of the Royal Society London.
- **Symposium organization:** "IUTAM Symposium on computer methods in biomechanics", Stanford, California, 2011.
- **Scientific committee:** "IUTAM Symposium on cellular, molecular and tissue mechanics", Woods Hole, Cape Cod, Massachusetts, 2008.
- **Miniworkshop organization:** "The mathematics of growth and remodeling of soft biological tissues", Oberwolfach, Germany, 2008.

- Minisymposia organization: “Growth and remodeling” and “Multiscale modeling of materials”, USNCCM IX, San Francisco, 2007.
- Session organization: “Biomechanics” GAMM Annual Meeting, Berlin, 2006.
- Committees: Stanford ME Graduate Admission Committee, Stanford ME ABET Committee, Society of Women Engineers SWE Fellowship Committee.
- Memberships: American Society of Mechanical Engineers (ASME), American Heart Association (AHA), American Society of Engineering Education (ASEE), European Society of Biomechanics (ESB), German Association for Applied Mathematics and Mechanics (GAMM)

## B. Selected peer-reviewed publications (selected from more than 50)

underlined: Kuhl's students

1. **Kuhl E**, Ramm E. On the linearization of the microplane model, Mech Coh Frict Mat 3: 343-364, 1998.
2. **Kuhl E**, Ramm E, de Borst R. An anisotropic gradient damage model for quasi-brittle materials, Comp Meth Appl Mech Eng 183: 87-103, 2000.
3. **Kuhl E**, Hulshoff S, de Borst R. An arbitrary Lagrangian-Eulerian finite-element approach for fluid-structure interaction phenomena, Int J Num Meth Eng 57: 117-142, 2003.
4. **Kuhl E**, Steinmann P. Mass-and volume specific views on thermodynamics of open systems, Proc Roy Soc London 459: 2547-2568, 2003.
5. **Kuhl E**, Menzel A, Steinmann P. Computational modeling of growth: A critical review, a classification of concepts and two new consistent approaches, Comp Mech 32: 71-88, 2003.
6. Mergheim J, **Kuhl E**, Steinmann P. A hybrid discontinuous Galerkin/interface method for the computational modeling of failure, Comm Numer Meth Eng 20: 511-519, 2004.
7. **Kuhl E**, Steinmann P: Computational modeling of healing: An application of the material force method, Biomech Modeling Mechanobiology 2: 187-203, 2004.
8. Himpel G, **Kuhl E**, Menzel A, Steinmann P. Computational modelling of isotropic multiplicative growth, Comp Mod Eng Sci 8: 119-134, 2005.
9. **Kuhl E**, Garikipati K, Arruda EA, Gosh K. Remodeling of biological tissue: Mechanically induced reorientation of a transversely isotropic chain network, J Mech Phys Solids: 53, 1552-1573, 2005.
10. **Kuhl E**, Balle F. Computational modeling of hip replacement surgery: total hip replacement vs. hip resurfacing, Tech Mech 25: 107-114, 2005.
11. Hirschberger CB, **Kuhl E**, Steinmann P. On deformational and configurational mechanics of micromorphic hyperelasticity - Theory and computation, Comp Meth Appl Mech Eng 196, 4027-4044, 2007.
12. **Kuhl E**, Holzapfel GA. A continuum model for remodeling in living structures, J Mater Sci **42**, 8811-8823, 2007.
13. **Kuhl E**, Maas R, Himpel G, Menzel A. Computational modeling of arterial wall growth: Attempts towards patient specific simulations based on computer tomography, Biomech Model Mechanobiology **6**, 321-331, 2007.
14. Jager P, Steinmann S, **Kuhl E**. On local tracking algorithms for the simulation of three-dimensional discontinuities, Comp Mech 42:395-406, 2008.
15. Meier HA, **Kuhl E**, Steinmann P. A note on the generation of periodic granular microstructures based on grain size distributions, Int J Num Anal Meth Geomech 32:509-522, 2008.
16. Himpel G, Menzel A, **Kuhl E**, Steinmann P. Time-dependent fiber reorientation of transversely isotropic continua, Int J Num Meth Eng 73:1413-1433, 2008.
17. Krishnamurthy G, Ennis DB, Itoh A, Bothe W, Swanson-Birchill JC, Karlsson M, **Kuhl E**, Miller DC, Ingels NB. Material properties of the ovine mitral valve anterior leaflet in vivo from inverse finite element analysis. Am J Physiol Heart Circ Physiol. 295:H1141-H1149, 2008.
18. Taylor RE, Zheng C, Jackson PR, Doll JC, Chen JC, Holzbaur KRS, Besier T, **Kuhl E**. The phenomenon of twisted growth: Humeral torsion in dominant arms of high performance tennis players. Comp Meth Biomech Biomed Eng 12:83-93, 2009.
19. Bol M, Reese S, Parker KK, **Kuhl E**. Computational modeling of muscular thin films for cardiac repair. Comp Mech 43:535-544, 2009.
20. Goktepe S, **Kuhl E**. Computational modeling of electrophysiology: A novel finite element approach. Int J Num Meth Eng, DOI: 10.1002/nme.2571, 2009.

## C. Research Support

### Ongoing Research Support

- since 2008: BioX Stanford. An integrated approach to cardiac repair: Predictive computational models, engineered biomaterials, and stem cells, Investigators: PI Heilshorn, co-PIs Kuhl, Zarins.
- since 2008: BioX Stanford. Engineering and modeling cell micro-environments to probe cross-talk between cell-cell adhesion and cell migration, Investigators: PIs Kuhl, Nelson, Pruitt.
- since 2007: NSF EFRI. Engineering of Cardiovascular Cellular Interfaces and Tissue Constructs, Pruitt, Heilshorn, Kuhl, Wu, Zarins.