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Born on October 7, 1973 in Ulm (Germany)



Scientific Career

- Since 2016 Fellow of the SC SimTech – Stuttgart Centre for Simulation Sciences
- Since 2013 W3-Professor for "Continuum Biomechanics and Mechanobiology" at the Cluster of Excellence for Simulation Technology (SimTech) and at the Institute of Applied Mechanics (Civil Engineering), Chair Continuum Mechanics, University of Stuttgart, Germany
- Since 2011 Attract-Group Leader for the "Virtual Orthopaedic Lab" at the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Stuttgart
- 2008 - 2013 Junior Professor for "Continuum Biomechanics and Mechanobiology" at the Cluster of Excellence for Simulation Technology (SimTech) and at the Institute of Applied Mechanics (Civil Engineering), Chair Continuum Mechanics University of Stuttgart, Germany
- 2004 - 2008 Research Scientist at the Auckland Bioengineering Institute University of Auckland, New Zealand
- 2004 PhD in Applied Mathematics, University of Colorado at Boulder, USA
- 2000 - 2004 PhD student in Applied Mathematics, University of Colorado at Boulder, USA
- 1998 - 1999 Study of Mathematics at the University of Wisconsin at Milwaukee, USA
- 1994 - 2000 Study of Mathematics and Economical Affairs at the University of Ulm

Scholarships, Awards and Faculty Functions

- 2012 ERC Starting Grant recipient
- 2012 Capital Magazine, Top 40 under 40 in the category "Science"
- 2012 Honorary Professorship at the Auckland Bioengineering Institute, University of Auckland, New Zealand
- 2011 Fraunhofer Attract Fellow
- 2011 Richard von Mises Prize (GAMM)

Ten most important publications

* Publications jointly together with UoA-researchers involved within this IRTG

§ Publications jointly together with USTUTT-researchers involved within this IRTG

A) Published in publication outlets with scientific quality assurance and book publications:

1. * Fernandez, J.; Zhang, J.; Heidlauf, T.; Sartori, M.; Besier, T.; Röhrle, O.; Lloyd, D.: Multiscale Modelling, Data-Model Fusion and Integration of Organ Physiology in the Clinic: Musculoskeletal. Interface Focus, 6(2), 20150084, 11 pages, 2016.
2. Mordhorst, M.; Heidlauf, T.; Röhrle, O.: Predicting electromyographic signals under realistic conditions using a multiscale chemo-electro-meechanical finite element model. Interface Focus, 5(2), 11 pages, 2015.
3. § Karajan, N.; Röhrle, O.; Ehlers, W.; Schmitt, S.: Linking Continuous and Discrete Intervertebral Disc Models through Homogenisation. Biomechanics and Modeling in Mechanobiology, 12(3), p. 453-466, 2013.
4. Röhrle, O.; Davidson, J.B.; Pullan, A.J.: A physiologically based, multi-scale model of skeletal muscle structure and function. Frontiers in Striated Muscle Physiology, Frontiers Physiology, 3:358, 14 pages, 2012.
5. § Günther, M.; Röhrle, O.; Haeufele, D.F.B.; Schmitt S.: Spreading out muscle mass within a Hill-type model. Computational and Mathematical Methods in Medicine, 13 pages, 2012.
6. * Bradley, C.; Bowery, A.; Britten, R.; Budelmann, V.; Camara, O.; Christie, R.; Cookson, A.; Frangi, A.; Gamage, T.B.; Heidlauf, T.; Krittian, S.; Ladd, D.; Little, C.; Mithraratne, K.; Nash, M.; Nickerson, D.; Nielsen, P.; Nordbø, Ø.; Omholt, S.; Pashaei, A.; Paterson, D.; Rajagopal, V.; Reeve, A.; Röhrle, O.; Safaei, S.; Sebastian, R.; Steghöfer, M.; Wu, T.; Yu, T.; Zhang, H.; Hunter, P.: OpenCMISS: A multi-physics & multi-scale computational infrastructure for the VPH/Physiome project, Progress in Biophysics and Molecular Biology, 107, p. 32-47, 2011.
7. Röhrle O.: Simulating the Electro-Mechanical Behavior of Skeletal Muscles. Computing in Science and Engineering, 12(6), p. 48-58, 2010.
8. * Xu, P.; Bronlund, J.; Potgieter, J.; Foster K.D.; Röhrle O.; Pullan, A.J.; Kieser, J.A.; Review of the Human Masticatory System and Masticatory Robotics. Mechanism and Machine Theory, 43(11), p. 1353-1375, 2008.
9. Röhrle, O.; Davidson, J.B.; Pullan, A.J.: Bridging Scales: A Three-dimensional Electromechanical Finite Element Model of Skeletal Muscle, SIAM Journal on Scientific Computing Volume, 30(6), p. 2882-2904, 2008.
10. Röhrle O.; Pullan, A.J.: Three-dimensional finite element analysis of muscle forces during mastication. Journal of Biomechanics, 40(15), p. 3363-3372, 2007.

A) Other publications

B) Patents

1. * "Biophysical Virtual Model Database and Applications", United States of America, No. PCT/IB2007/002246, dated August 4, 2007.
2. "Verfahren zur Bestimmung einer Beißkraft", DE 10 2013 211 623.3, granted.

Supervised graduate students since graduation year 2011

No.	Last Name, First Name	Degree	Title of the dissertation	Duration of thesis
1	Sprenger, Michael	Dr.-Ing.	An EMG-Driven Finite Element Upper Arm Model	2009 - 2015
2	Heidlauf, Thomas	Dr.-Ing.	Modelling the Neuromuscular System	2009 - 2015
3	Ramasamy, Ellankavi	Dr.-Ing.	Simulation-assisted prosthetic design	2012 -
4	Morales Ortuno, Sergio	Dr.-Ing.	Finite Element Modelling of the Human Aortic Valve under Healthy and Diseased Conditions	2012 -
5	Bleiler, Christian	Dr.-Ing.	Forward Dynamics Simulations of the residual limb	2013 -
6	Altan, Ekin	Dr.-Ing.	Modelling Skeletal Muscle Growth and Atrophy	2013 -
7	Mordhorst, Mylena	Dr.-Ing.	Model Order Reduction Techniques for skeletal muscle mechanics	2013 -
8	Hessenthaler, Andreas	Dr.-Ing.	Multigrid-in-time methods for FSI problems	2015 -

Most important research grants since 2011

No.	Research Project	Funding Period	Name(s) of the principal investigator(s)	Funding source and reference number
1	EMMA-CC: Ergo-dynamic Moving MAnikin with Cognitive Control	2015 - 2018	Röhrle, O. (PI)	Fraunhofer MAVO
2	FeuerWeRR - Feuerwehrtaugliche Wärmebildkamera mit erweiterter Realität durch Radarsensorik	03/2015 - 02/2018	Röhrle, O. (Coordinator)	BMBF 13N13479
3	TRR 141 - Biological Design and Integrative Structures (TP A03 and TP A09)	10/2014 - 06/2018	Röhrle, O. (Speaker: J. Knippers)	DFG
4	Lower Extremity Amputee Dynamics (LEAD): Simulating the Motion of an Above-Knee Amputee's Stump by Means of a Novel, EMG-Integrated, 3D Musculoskeletal, Forward-Dynamics Modelling Approach	11/2012 - 10/2017	Röhrle, O.	FP7, ERC-StG-2012-306757
5	Modelling Skeletal Muscle Growth and Atrophy	11/2013 - 10/2017	Röhrle, O.	ExC 310/2 PN 4-2
6	Virtual Orthopaedic Lab (VOL) - Simulationsumgebung für Orthopädieforschung und -entwicklung	11/2011 - 10/2016	Röhrle, O.	Fraunhofer Attract