CURRICULUM VITAE

Lorenzo Sanavia

Associate Professor of Mechanics of materials and structures and Computational Mechanics at the Department of Civil, Environmental and Architectural Engineering ICEA of the University of Padua (Italy.

MSc in Civil Engineering, University of Padua (July 93); PhD in Computational Mechanics, University of Padua (September 97).

Author of more than 140 scientific publications including 22 peer reviewed international journal papers.

Research interests: mathematical and numerical modelling of non-linear multiphase porous materials in non-isothermal conditions; constitutive modelling of variably saturated geomaterials in non-isothermal conditions; numerical methods in engineering; computational geo-environmental mechanics, with emphasis to strain localisation and water cavitation in multiphase geomaterials; dynamics of non-isothermal multiphase geomaterials; numerical treatment of the post-bifurcation behaviour of geomaterials; finite element modelling of coupled problems; finite strain elasto-plasticity; phase-field modelling of fracture in variably saturated porous media.

Visiting postgraduate student at the Institut für Baumechanik und Numerische Mechanik of the University of Hannover (D), directed by Prof. E. Stein, for 14 months during 1995-1997. Research assistant at the Lehrstuhl für Technische Mechanik, University of Kaiserslauter (D), directed by Prof. P. Steinmann during 1999-2002. Scientific cooperation with Professor Lyesse Laloui at the EPFL Lausanna (Switzerland).

Plenary lecturer in the Eccomas Thematic Conference MHM2007 Modelling of Heterogeneous Materials with applications in construction and biomedical engineering, Prague, 25-27 June 2007.

Invited Speaker at The Sixth International Conference on Porous Media InterPore 2014, Milwaukee, 27-30 May 2014 (http://www.interpore.org/conference-program/56-6th-international-conference-on-porous-media-annual-meeting/203-invited-speakers14-2?lang=de).

Member of the ALERT Board of Directors (2001-2008; elected 2008-2011, 2011-2014, 2014-2017) and the European Mechanics Society EUROMECH (since 2006).

Member of the Technical Advisory Panel of the Eccomas Thematic Conference: Computational Methods for Coupled Problems in Science and Engineering COUPLED PROBLEMS 2009 – 20-22 June 2011, Kos Island, Greece.

Member of the Local organizing committee of Trends & Challenges in Computational Mechanics TCCM 2011 - A Conference in Honor of Peter Wriggers 60th Birthday. http://tccm2011.unisalento.it/i_committees.html. Padova, 12-14 Settembre 2011.

Member of the Scientific Committee of the Eccomas Thematic Conference: Computational Methods for Coupled Problems in Science and Engineering COUPLED PROBLEMS 2013 -17-19 June 2013, Ibiza, Spain.

Program Committee member and Reviewers of the 5th Biot Conference on Poromechanics, July 10-12, 2013, Vienna.

Scientific Committee member of the Eccomas Thematic Conference: VI International Conference on Coupled Problems in Science and Engineering COUPLED PROBLEMS 2015 - 18-20 May 2015, Venice, Italy.

Scientific Committee member of the Eccomas Thematic Conference: VI International Conference on Coupled Problems in Science and Engineering COUPLED PROBLEMS 2017 - 12-14 June 2017, Rhodes Island, Greece.

Associate editor of the European Journal of Environmental and Civil Engineering (http://www.tandfonline.com/toc/tece20/current#.UcwBt21mMYs).

Teaching activity developed at the University of Padua, with regard to the courses of Mechanics of Materials for Energy Eng. and Computational Methods for Structural Eng. for Civil Engineers.

Lecturer at the XIVth European ALERT School "Numerical modeling in geomechanics", Aussois, France, Oct. 2002.

Co-organizer of the II Summer School "Applications of parallel computing to Science and Engineering", University of Padova, July 7-10, 2003.

Lecturer in the 1st ALERT Olek Zienkiewicz Course on "Numerical Methods in Geomechanics", Madrid, Spain 2009.

Co-organizers of several Minisymposia in the fields of Computational Geomechanics and Multiphase modelling of porous materials.

Lecturer in the ALERT Olek Zienkiewicz Course in Advanced Numerical Modelling in Geomechanics, Madrid, Spain 2014.

Lecturer in the MUMOLADE Winter School 2015: Computational Approaches to Model Multi-phase Porous Materials, Padova, January 19-23, 2015.

Lecturer in the ALERT International Doctoral School 2015: Coupled and multiphysics phenomena, Aussois (Fr), 1-3 October 2015.

System administrator of the Parallel Computer Centre of the Department (1993 - 2003). Director of the Student Computer Centre PINECA of the University of Padua, Engineering Faculty (2002 - 2009). Member of the promoting committee of the Special Project for Computational Sciences of the University of Padua Computing Centre.

Research projects

FSE Regione Veneto 2105_201_7_1686_2012, 2012, azione: TN4: Valorizzazione del capitale umano, Università degli Studi di Padova and Enginsoft SpA Trento: Virtual modelling of the onset of landslides due to rainfall and/or earthquake with a fully coupled multiphase porous media model.

FP7-PEOPLE-2011-ITN Marie Curie Actions - Initial Training Networks (ITN) 2011: *Multiscale Modelling of Landslides and Debris Flows*. Coord. Prof. W. Wu, Universität für Bodenkultur Wien (A). Scientist-in-charge at the University of Padua.

University of Padua: CPDA097373: *Numerical modelling of concrete and clay barriers for deep radioactive waste disposal based on porous media mechanics,* 2009.

Ex60%2008, 2009 Università di Padova: *Modelli accoppiati idro-termo-meccanici per solidi porosi multifase con applicazioni in ingegneria ambientale*

Ex60%2005, 2006 e 2007 Università di Padova: *Modelli idro-termo-meccanici per solidi multifase con applicazione a casi di interesse ingegneristico*.

Ex60% 2002, 2003, 2004 Università di Padova: *Modelli idro-termo-meccanici per lo studio della localizzazione delle deformazioni nei continui multifase, con applicazione a casi di interesse ingegneristico.*

Progetto strategico di Ateneo 2009 STPD08JA32 *Algoritmi e Architetture per la Scienza e l'Ingegneria Computazionali*, resp. di progetto prof. G. Bilardi, resp. locale prof. B.A. Schrefler.

Organization of Minisymposia and Invited Sessions in International Conferences

Invited Session: *Mechanics of multiphase porous media in modelling cementitious materials: from early ages to durability issues*, ALERT Workshop 2016, Aussois (Fr), October 3-5, with Francesco Pesavento (University of Padova) and Matthieu Briffaut (Université Grenoble Alpes UGA).

Invited Session: *Computational models and methods for multiphysics processes in multiphase porous media*. Eccomas Thematic Conference COUPLED PROBLEMS 2015, May 18-20, 2015, Venice, Italy, con Claudio Tamagnini (Univ. di Perugia, I).

Minisymposium: *Multiphysics modelling of porous media: geomaterials, biomaterials and*

others. 11th. World Congress on Computational Mechanics (WCCM XI), Barcelona, July 20-25, 2014, with Younane N. Abousleiman (University of Oklahoma, USA), Stefan Diebels (University of Saarlandes, Germany).

Invited Session: *Multiphysics coupling*, ALERT Workshop 2014, Aussois (Fr), September 29 - October 1, with Robert Charlier (Université de Liège) and Jean Vaunat (Universitat Politècnica de Catalunya).

Invited Session *Computational models and methods for multiphysics processes in multiphase porous media*. Eccomas Thematic Conference COUPLED PROBLEMS 2013, June 17-19, 2013, Ibiza, Spain, with Claudio Tamagnini (Università di Perugia, I).

Minisymposium: *Multiphysics numerical modelling of geomaterials and computational strategies*. BIOT-5 5th BIOT Conference on Poromechanics, July 10-12, 2013, Vienna, Austria, with Francesco Pesavento and Bernhard A Schrefler.

Invited Session: *Computational Mechanics of Multiphase Porous Materials*. Eccomas Thematic Conference COUPLED PROBLEMS 2011, 20-22 June 2011, Kos Island, Greece, with B. Markert (UniStuttgart, D).

Minisymposium: *Computational models and methods for multiphysics processes in geomaterials, biomaterials and other multiphase porous media.* IV European Conference of Computational Mechanics ECCM 2010, 16-21 May 2009, Paris (F), with Lyesse Laloui (EPFL, CH).

Invited Session: *Multiphysics modelling of Geo-Environmental Engineering Problems.* Eccomas Thematic Conference COUPLED PROBLEMS 2009, 8-11 June 2009, Ischia (I), with Lyesse Laloui (EPFL, CH.

Invited Session: *Multiphysics of multiphase materials*, in 19th ALERT Workshop, Aussois, Fr, October 6-8, 2008, with E. Papamichos (Aristotle Univ of Thessaloniki, GR).

IACM-IUTAM Minisymposium (composto da 4 sessioni): *Multiphysics modelling of porous media: geomaterials, biomateriale and others*, 8th World Congress on Computational Mechanics WCCM8, June 30, July 4, 2008, Venice (I), with Younane N. Abousleiman (University of Oklahoma, USA) and Stefan Diebels (University of Saarlandes, Germany).
    http://www.iacm-eccomascongress2008.org/frontal/ProgMS.asp?c=MS079

Minisymposium: *Multi-phase, multiphysics modeling of porous media*. ECCOMAS Thematic Conference on Modelling of Heterogeneous Materials with Applications in Construction and Biomedical Engineering (MHM 2007), 25-27 June, Prague (CZ), with B.A. Schrefler. http://mech.fsv.cvut.cz/mhm2007/mhm2007-final_program.pdf

Session: *Computational thermo-hydro-mechanics of porous media*, 3rd Biot Conference May 24-27, 2005, University of Oklahoma, Norman, Oklahoma, USA, with B.A. Schrefler.

Minisymposium *Computational Geomechanics,* IVth European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2004), Jyväskylä, Finland, 24 - 28 July 2004, with Felix Darve (INP Grenoble) and Francois Nicot (Cemagref Grenoble).

Invited Session: *Geoenvironmental Engineering, in* ALERT Workshop 1999, Aussois, France, October 25-27, with Pierre Delage (CERMES, Paris).

Summer/Winter Schools

ALERT International Doctoral School 2015 on Coupled and multiphysics phenomena, Aussois (Fr), 1-3 ottobre 2015, con Bernhard Schrefler e Frederic Collin. http://alertgeomaterials.eu/data/school/2015/2015_ALERT_schoolbook.pdf

International MUMOLADE Winter School 2015, Padova, 19-27 gennaio 2015. http://www.dicea.unipd.it/en/research/mumolade-winter-school-2015

Summer School: *Applications of parallel computing to Science and Engineering*, Centre of Excellence MIUR "Science and Applications of Advanced Computing Paradigms", Padova, Italia, Luglio 7-11, 2003. With Gianfranco Bilardi and Giuseppe Tormen.

Cooperation in organzing International Conferences

Local Organzing Committee of the *Seventh International Conference on Porous Media InterPore 2015*, Padova, 18-21 May 2015.

Local Organzing Committee of the International Conference *Trends & Challenges in Computational Mechanics TCCM 2011* - A Conference in Honor of Peter Wriggers 60th Birthday. Padova, 12-14 Settembre 2011.

Cooperation with Congress Secretariat of: *COUPLED PROBLEMS 2009*, 8-11 June 2009, Ischia (I).

Cooperation with Congress Secretariat of: 8th World Congress on Computational Mechanics *WCCM8*, 30 June – 4 July, 2008, Venice (I).

Congress Secretariat of: *GAMM2003 Gesellschaft für Angewandte Mathematik und Mechanik*, Abano Terme (Pd, Italy) 24-28 March 2003.

Peer Reviewer for:

- Acta Geotechnica (Springer)
- Acta Mechanica (Springer)
- Acta Polytechnica (international journal published by the Czech Technical University Prague)
- Applied Mathematical Modelling (Elsevier)
- Computer Methods in Applied EngineeringComputer Methods in Applied Mechanics and Engineering (Elsevier)
- CMES - Computer Modeling in Engineering and Sciences (Tech Science Press)
- Engineering Geology (Elsevier)
- European Journal of Environmental and Civil Engineering (Taylor & Francis)
- European Journal of Mechanics - A/Solids (Elsevier)
- Géotechnique (Institution of Civil Engineers (ICE) publishing, Thomas Telford

Limited)

- Géotechnique Letters (Institution of Civil Engineers (ICE) publishing, Thomas Telford Limited)

- Journal of the Mechanics and Physics of Solids (Elsevier)

- Int. Journal for Numerical and Analytical Methods in Geomechanics (Wiley)

- International Journal for Numerical Methods in Engineering (Wiley)

- International Journal of Numerical Methods for Heat and Fluid Flow (Emerald Group Publishing Limited)

- Journal of Computational Physics (Elsevier)

- Journal of Engineering Mechanics (ASCE)

- Journal of Mechanics of Materials and Structures (JoMMS, Mathematical Sciences Publishers, www.jomms.org)

- Mathematical Problems in Engineering (Hindawi Publishing Corporation)

- Meccanica (Springer)

- Philosophical Magazine (Taylor & Francis)

- Soil Dynamics and Earthquake Engineering (Elsevier)

- Vadoze Zone Journal (Soil Science Society of America)

- Water Resources Research (Wiley - American Geophysical Union)

Session: *Modeling of Multiphysics Processes in Soils*, congresso GeoDenver 2007, organized by T. Hueckel (Duke University) e L. Laloui (EPFL).

EUNSAT 2012 (2nd European Conference on Unsaturated Soils) organized by Cristina Jommi (Politecnico di Milano, I) and Claudio Mancuso (Università di Napoli, I).

Congress ASME 2012, 11th Biennial Conference On Engineering Systems Design And Analysis.

Foundation STW (Dutch Technology Foundation) – 2009, 2016.