

**Curriculum Vitae**  
**Luigi La Ragione**  
**Dipartimento di Scienze dell'Ingegneria Civile e dell'Architettura (DICAR)**  
**Politecnico di Bari, Via Re David, 200**  
**70125 Bari, Italy**

**I. Education**

Laurea Cum Laude in Civil Engineering, Politecnico di Bari (Italy), December 1995

PhD, Mechanics, "Micromechanical behavior of random aggregate of particles"  
Università di Firenze, Italy, March 2000

**II. Academic Experience**

2002-2015: Assistant Professor, Politecnico di Bari (Italy)

2015- present: Associate Professor, Politecnico di Bari (Italy)

2017 National Habilitation in Italy as Full Professor

**III. Visiting Positions**

July 2017- August 2017 Visiting Professor School of Civil and Environmental Engineering, Cornell University (USA)

June 2016- August 2016 Visiting Professor, Department of Mechanical and Aerospace Engineering in junction with School of Civil and Environmental Engineering, Cornell University (USA)

March 2016 Visiting Scientist, Max Plank Institute Dresden (Germany)

June 2015- August 2015 Visiting Professor, Department of Mechanical and Aerospace Engineering in junction with School of Civil and Environmental Engineering, Cornell University (USA)

June 2014- August 2014 Visiting Professor, Department of Mechanical and Aerospace Engineering in junction with School of Civil and Environmental Engineering, Cornell University (USA)

Sept 2013 – Dec 2013 Visiting Scientist, Kavli Institute for Theoretical Physics, University of Santa Barbara, CA, USA

June 2013-August 2013: Visiting Professor, Department of Mechanical and

Aerospace Engineering in junction with School of Civil and Environmental Engineering, Cornell University (USA)

June 2012 Invited Guest at SRB 2012 of the Stanford Rock Physics & Borehole Geophysics Project, Stanford University (USA)

August 2011-July 2012: Visiting Assistant Professor, School of Civil and Environmental Engineering Cornell University (USA)

June 2005: Visiting Scientist, Kavli Institute for Theoretical Physics, University of Santa Barbara, CA (USA)

August-December 2004: Visiting Professor, Department of Theoretical and Applied Mechanics, Cornell University, NY, (USA)

September-November 2003: Visiting Scientist, Isaac Newton Institute, Cambridge, (UK)

December 2002: Visiting Scientist, Department of Theoretical and Applied Mechanics, Cornell University, NY, (USA)

September-October 2002: Visiting Scientist, Max-Planck Institute, Dresden (Germany)

October-November 2001: Visiting Professor, Department of Theoretical and Applied Mechanics, Cornell University, NY, (USA)

Summer 2001: Visiting Scientist, Schlumberger Doll Research Center, Ridgefield, CT, (USA)

January-July 2001: Postdoctoral Associate, Theoretical Mechanics Group, Kingston University, (UK)

September 2000-January 2001: Postdoctoral Associate, Politecnico di Bari, (Italy)

April-June 2000: Postdoctoral Associate, Department of Theoretical and Applied Mechanics, Cornell University, NY, (USA)

#### **IV. Invited Seminars**

Max Plank Institute, Dresden (Germany), 2016

City College New York City (USA), 2015

University of Udine (Italy), 2014

Kavli Institute of Theoretical Physics, University of California (USA), 2013

University of Minnesota, EM'08, Minneapolis, MN, (USA), 2008

Politecnico of Milan (Italy), 2007

Southern Workshop on Granular Materials, Vina del Mar (Chile), 2006

Cornell University, Ithaca, NY (USA), 2004

University of Nebraska, Lincoln, NE (USA), 2004

Isaac Newton Institute for Mathematical Sciences, Cambridge (UK), 2003

University of Genova (Italy), 2000

Laboratoire Sols, Solides, et Structures, Grenoble, (France), 2000

## **V. Research Grants as P.I.**

Office of Naval Research: ONR Global, London 2017-2019: “Theoretical, numerical and experimental analysis of elastic and acoustic waves in a fluid-saturated aggregate of particles”. N62909-17-1-2048

Office of Naval Research: ONR Global, London “Fluidization of a sand bed”, 2014, N62909-14-1-V261

Office of Naval Research: ONR Global, London, “An experimental and theoretical investigation on the fluidization of a sand bed by turbulent fluctuations in the absence of mean shearing”, 2013, N62909-13-1-V152

Office of Naval Research: ONR Global, London, “Constitutive Modeling in Granular Materials”, 2011-2012, N62909-11-1-4055

Foreign Affairs Office (M.A.E., Italy), Bilateral Protocol USA-Italy (Annex IV), “Numerical Simulation of Granular Materials” 2005-2007

Office of Naval Research: ONR Global, London, “Wave Propagation in Granular

Media, 2004, N00014-04-1-4112

Royal Society of London, UK, “Post-Doctoral Fellowship” 2001, rif.:24755/011/C2

Young Research Project: “Constitutive models for granular material”, Agenzia 2000 C.N.R., Italy, CNRG00F440

## **VI. Member of research team**

Strategic Research Project: “Landslide risk assessment for the planning of small centres located in chain areas: the case of the Daunia region, 2006-2009, Regione Puglia, Italy

National University Office (M.I.U.R., Italy), “Mechanics of Materials and Structures”, Co-fin 2000, 2003, 2005, 2008 , Italy), “Mechanics of Materials and Structures”, Co-fin2000, 2003, 2005, 2008

## **VII. Courses Taught**

Mechanical Properties and Selection of Engineering Materials (Cornell University, USA)

Calculus for Engineering, Cornell University (Cornell University, USA)

Solid Mechanics, Politecnico di Bari (Italy)

Statics, Politecnico di Bari (Italy)

Mechanics of Structures, Politecnico di Bari (Italy)

Mechanics of Granular Materials, Politecnico di Bari (Italy)

Structural Dynamics, Politecnico di Bari (Italy)

## **VIII. Scientific committees**

Member of the Scientific and Organization Committees of the Workshop  
“Deformation and Failure of Geomaterials”, 14-19 June 2009, Masseria Salamina  
(Brindisi, Italy).

## **IX. Refereeing**

Proceedings of the Royal Society of London A  
Mathematics and Mechanics of Solids  
International Journal of Fracture  
Acta Geotechnica  
Acta Acustica/Acustica  
International Journal of Plasticity  
Journal of Engineering Mechanics  
Journal of the Acoustical Society of America  
Physica A  
The European Journal of Mechanics A-Solids  
Continuum Mechanics and Thermodynamics  
International Journal of Solids and Structures  
Acta Mechanica  
Journal of the Mechanics of Physics and Solids  
Granular Matter  
Journal of Fluid Mechanics

## **X. Articles with peer review**

1. “Particle Spin in Anisotropic Granular Materials” (with J.T. Jenkins), International Journal of Solids and Structures 38, 1063-1069 (2001)
2. “Fluctuations and state variables for random arrays of identical disks” (with J.T. Jenkins), in Powders and Grains 01 (Y. Kishino, Ed.) pp.195-198, A.A. Balkema: Leiden, 2001
3. “Continuum modeling of systems of disks in quasi-static conditions: inclusion of fluctuations (with I. Angolin and J. T. Jenkins), in Powders and Grains 05 (R. Garcia-Rojo, H. J. Herrmann and S. McNamara, Eds.) pp. 169-173, A. A. Balkema: Leiden, 2005
4. “Fluctuations and the effective moduli of an isotropic, random aggregate of identical, frictionless spheres” (with J.T. Jenkins, D. Johnson and H. Makse), Journal of the Mechanics and Physics of Solids 53, 197-225 (2005)

5. "A Continuum Theory for a Random Array of Identical, Elastic, Frictional Disks" (with I. Agnolin and J.T. Jenkins), *Mechanics of Materials* 38, 687-701 (2006)
6. "A Solution for the Stress Distribution in Granular Medium", *Meccanica* 41, 413-423(2006)
7. "The Initial Response of a Granular Material" (with J.T. Jenkins), *Proc. Roy. Soc. A* 463,735-758 (2007)
8. "A simplified model for inelastic behavior of an idealized granular material" (with V.C. Prantil and I. Sharma), *International Journal of Plasticity* 24, 168-189 (2008)
9. "Characterizing the shear and bulk moduli of an idealized granular material" (with V.Magnanimo, J.T. Jenkins, P. Wang and H. A. Makse), *Europhysics Letter* 81, 34006 (2008)
10. "Axial-symmetric indentation of a rigid cylinder on a layered compressible and incompressible half-space" (with F. Musceo and A. Sollazzo), *Journal of Mechanics of Materials and Structures* 3, 1499-1520 (2008)
11. "Constant pressure axisymmetric compression of an aggregate of identical, elastic, frictional spheres" (with V. Magnanimo and J. T. Jenkins), *American Institute of Physics Conference Proceedings* 1145, 1100-1103 (2009)
12. "The Influence of Particle Fluctuations on the Average Rotation in an Idealized Granular Material" (with J.T. Jenkins), *Journal of the Mechanics and Physics of Solids* 57, 1449-1458 (2009)
13. "Microstructure and particle-phase stress in a dense suspension" (with J. T. Jenkins), *American Institute of Physics Conference Proceedings* 1227, 41-49 (2010)
14. "Contact anisotropy and coordination number for a granular assembly: A comparison of distinct-element-method simulations and theory" (with V. Magnanimo), *Physical Review E* 85, 031304 (2012)
15. "Evolution of the effective moduli of an anisotropic, dense, granular material" (with V. Magnanimo), *Granular Matter* 14, 749-757 (2012)
16. "Yield loci for an anisotropic granular assembly" (with L. Oger), *Physical Review E* 86, 041309 (2012)
17. "A micromechanical numerical analysis for a triaxial compression of granular

materials” (with V. Magnanimo), American Institute of Physics Conference Proceedings 1542, 1234 -1237 (2013)

18. “Anisotropy and lack of symmetry for a random, aggregate of frictionless, elastic particles: theory and numerical simulations.” (with L. Oger, A. Sollazzo and G. Recchia), Proceedings of the Royal Society A November 8, 2015 471 20150013; doi:10.1098/rspa.2015.0013 (2015)

19. “An Analytical Determination of Microstructure and Stresses in a Dense, Sheared Suspension” (with J. T. Jenkins), Journal of Fluid Mechanics, 763, 218-236 (2015)

20. “A Micromechanical Prediction of Localization in a Granular Material” (with V.C. Prantil and J.T. Jenkins) Journal of the Mechanics and Physics of Solids 83, 146-159 (2015)

21. “The incremental response of a stressed, anisotropic granular material: loading and unloading”, Journal of the Mechanics and Physics of Solids 95, 147-168 (2016)

22. “Strength of anisotropy in a granular material: Linear versus nonlinear contact model” (with M. Gammariello and G. Recchia), Physical Review E 94, 062904 (2016)

23. “Localization in an anisotropic planar aggregate of spheres” (with J.T. Jenkins and V.C. Prantil), EPJ Web of Conferences, 140, 10008 (2017)

## **XI. Book Chapters**

“Particle Spin, Induced Anisotropy, and Effective Moduli in Granular Materials” (with J.T. Jenkins), in Rational Continua, Classical and New: A Collection of Papers Dedicated to Gianfranco Capriz, Springer Verlag, 2002

“Micromechanical modeling of granular materials (with J.T. Jenkins)”, Modeling and Mechanics of Granular and Porous Material, Birkhauser, 2002

## **XII. Conference Publications**

- “The mechanical behavior of random arrays of elastic spheres: Pair fluctuations” (with J.T. Jenkins), XIV Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Como (Italy), 1999
- “A triaxial test for a granular material: Comparison between theory and simulation”, (with J.T. Jenkins) XV Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Taormina (Italy), 2001
- “Inelastic response for a random aggregate of identical spheres under triaxial compression”, XVI Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Ferrara (Italy) , 2003
- “The role of particle spin in a granular material” (with J.T. Jenkins), QuaDPM'03 Workshop, Budapest-Hungary, 2003
- “The role of fluctuations in the equilibrium of a two-dimensional assembly of disks” (with I. Agnolin and J.T. Jenkins), QuaDPM'03 Workshop, Budapest-Hungary, 2003
- “Un problema dell'equilibrio elastico per un materiale granulare”, XVII Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Firenze (Italy),
- “Characterizing the shear and bulk moduli of dense granular materials” (with V. Magnanimo and H.A. Makse), Gruppo Materiali-AIMETA, Trento 23-24 Febbraio 2007
- “Uno studio numerico per un aggregato granulare denso” (with V. Magnanimo), XVIII Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Brescia (Italy), 2007
- “An irreversible behavior for a dense granular materials” (with V. Magnanimo), XIX Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Ancona (Italy), 2009
- “Wave propagation in anisotropic granular material” (with V. Magnanimo) XX Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Bologna (Italy), 2011
- “Particle migration and pressure in a dense suspension” (with J.T. Jenkins) XX Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Bologna (Italy), 2011
- “Anisotropy and shear moduli in a granular material” (with V. Magnanimo) “Second International Conference on Material Modeling, Paris (France), 2011
- “A simple model for a transversely isotropic granular material” New England Workshop on the Mechanics of Materials and Structures, MIT (Boston, USA), 2011
- “Anisotropy and granular materials” Congresso Nazionale Associazione Nazionale di Meccanica Teorica e Applicata, AIMETA, Genova (Italy), 2015



#### **XIV. Ph. D Thesis**

I have been tutor with Prof. A. Sollazzo of the following Ph.D. thesis at Politecnico di Bari (Italy)

Vanessa Magnanimo “Micromeccanica dei materiali granulari: analisi numerica e teorica di aggregati isotropi” (Politecnico di Bari)

Francesco Musceo “Sul contatto tra un corpo rigido assialsimmetrico e un sistema stratificato” (Politecnico di Bari)

Bari, May 2018