



UNIVERSITÀ DEGLI STUDI DELL'AQUILA

Prof. Alessandro Ciallella

Curriculum scientifico

(Aggiornato il 2023/10/06)

PERSONAL INFORMATIONS

First Name: Alessandro
Last Name: Ciallella
Address: Via Giovanni Gronchi 18, 67100, L'Aquila, Italy,
Scopus Author ID: 57201689800

[Alessandro Ciallella \(researchgate.net\)](#)

EDUCATION

2018 Ph.D. in PhD in Mathematical Models for Engineering, Electromagnetics and Nanosciences,

Department of Basic and Applied Sciences for Engineering, Sapienza University of Rome, Italy

2014 Master of Science in Mathematics (with honors), Sapienza University of Rome , Italy.

2011 Bachelor of Science in Mathematics, Sapienza University of Rome, Italy.

POSITION

2022 - today Research fellow (RTDa) , SSD ICAR/08, DICEAA, University of L'Aquila, Italy

2019 - 2022 Research fellow (RTDa) , SSD ICAR/08, DICEAA, University of L'Aquila, Italy

2018 - 2019 Post-Doc Researcher, Sapienza University of Rome, Italy.

2014 - 2018 Ph.D. student, Sapienza University of Rome , Italy.

QUALIFICATIONS

Achievement of the Abilitazione Scientifica Nazionale for the role of university associate professor in the Sector 08/B2 - SCIENZA DELLE COSTRUZIONI, valid from 06/06/2023 to 06/06/2034.

Achievement of the Abilitazione Scientifica Nazionale for the role of university associate professor in the Sector 01/A4 - FISICA MATEMATICA, valid from 08/06/2023 to 08/06/2034.

PUBLICATIONS

Ciallella, A., Giorgio, I., Barchiesi, E., Alaimo, G., Catteneone, A., Smaniotto, B., Vintache, A., D'Annibale, F., dell'Isola, F., Hild, F., Auricchio, F.,

A 3D pantographic metamaterial behaving as mechanical shield: experimental and numerical evidence. Submitted;

Valmalle, M., Smaniotto, B., Spagnuolo, M., Ciallella, A., Hild, F., *Mesoscale DVC analyses and parameter calibration for pantographic block in 3-point flexure*

. European Journal of Mechanics-A/Solids, 105063, (2023);

Ciallella, A., La Valle, G., Vintache, A., Smaniotto, B., Hild, F., *Deformation mode in 3-point flexure on pantographic block.* International Journal of Solids and Structures, 112129, (2023)

- Yildizdag, M. E., Ciallella, A., D'ovidio, G., *Investigating wave transmission and reflection phenomena in pantographic lattices using a second-gradient continuum model*. Mathematics and Mechanics of Solids, 10812865221136250, (2023).
- Ciallella, A., D'Annibale, F., Del Vescovo, D., Giorgio, I., *Deformation patterns in a second-gradient lattice annular plate composed of ?Spira mirabilis? fibers*, Continuum Mechanics and Thermodynamics, doi: 10.1007/s00161-022-01169-6, (2023).
- Ciallella, A.; Steigmann, J D., *Unusual deformation patterns in a second-gradient cylindrical lattice shell: Numerical experiments*, Mathematics And Mechanics Of Solids **28** (1) pp. 141-153, (2023).
- Ciallella A., D'Annibale, F., dell'Isola, F., Giorgio I., *Modal analysis of a second-gradient annular plate made of an orthogonal network of logarithmic spiral fibers*, in ?Sixty Shades of Generalized Continua?, Advanced Structured Materials vol. **170**, pp. 103-116, *book chapter*, (2023).
- Ciallella, A., Scerrato, D., Spagnuolo, M., Giorgio, I., *A continuum model based on Rayleigh dissipation functions to describe a Coulomb-type constitutive law for internal friction in woven fabrics*, Zeitschrift fur Angewandte Mathematik und Physik **73**(5), 209, (2022).
- Turco, E., Barchiesi, E., Ciallella, A., dell'Isola, F., *Nonlinear waves in pantographic beams induced by transverse impulses*, Wave Motion **115**, 103064, (2022).
- Placidi, L., Timofeev, D., Maksimov, V., Barchiesi, E., Ciallella, A., Misra, A., dell'Isola, F., *Micro-mechano-morphology-informed continuum damage modeling with intrinsic 2nd gradient (pantographic) grain?grain interactions*, International Journal of Solids and Structures **254-255**, 111880, (2022).
- Ciallella, A., Pasquali, D., D'Annibale, F., Giorgio, I., *Shear rupture mechanism and dissipation phenomena in bias extension test of pantographic sheets: numerical modeling and experiments*, Mathematics And Mechanics Of Solids vol. **27**, pp. 2170-2188, (2022).
- Ciallella A., Cirillo E.N.M., Vantaggi B., *Localization of Defects Via Residence Time Measures*, Siam Journal On Applied Mathematics **82** (2) pp. 502-525, (2022).
- La Valle, G., Ciallella, A., Falsone, G., *The effect of local random defects on the response of pantographic sheets*, Mathematics and Mechanics of Solids **27**(10), pp. 2147-2169, (2022).
- Branecka, N.; Yildizdag, M. E.; Ciallella, A.; Giorgio, I. *Bone Remodeling Process Based on Hydrostatic and Deviatoric Strain Mechano-Sensing*. Biomimetics vol. **7** (2), 59, (2022).
- Bersani, A. M., Caressa, P., Ciallella, A., *Numerical evidence for the approximation of dissipative systems by gyroscopically coupled oscillator chains*, Mathematics and Mechanics of Complex Systems, **10**(3), pp. 265-278, (2022).
- Harsch, J., Ganzosch, G., Barchiesi, E., Ciallella, A., Eugster, S.R., *Experimental analysis, discrete modeling and parameter optimization of SLS-printed bi-pantographic structures*, Mathematics and Mechanics of Solids **27**(10), pp. 2201-2217, (2022).
- Ciallella A., Giorgio I., Eugster S. R., Rizzi N.L., dell'Isola F., *Generalized beam model for the analysis of wave propagation with a symmetric pattern of deformation in planar pantographic sheets*, Wave Motion, vol. **113**, 102986, (2022).
- Valmalle, M.; Vintache, A., Smaniotti, B., Gutmann, F., Spagnuolo, M., Ciallella A., Hild, F., *Local?global DVC analyses confirm theoretical predictions for deformation and damage on set in torsion of pantographic metamaterial*, Mechanics Of Materials vol. **172**, pp.104379, (2022).
- Spagnuolo, M., Reccia, E., Ciallella, A., Cazzani, A., *Matrix-embedded metamaterials: Applications for the architectural heritage*, Mathematics and Mechanics of Solids **27** (10), pp. 2275-2286, (2022).
- Ciallella A., Pulvirenti M., Simonella S., *Propagation of Chaos for a Stochastic Particle System Modelling Epidemics*, Advanced Structured Materials vol. **175**, pp. 105-118, *book chapter*, (2021).
- Barchiesi, E.; Ciallella, A.; Giorgio, I., *On Boundary Layers Observed in Some 1D Second-Gradient Theories*, Advanced Structured Materials vol. **175**, pp. 359-376, *book chapter*, (2021).
- Ciallella A., Pulvirenti M., Simonella S., *Inhomogeneities in Boltzmann-SIR models*, Mathematics And Mechanics Of Complex Systems vol. **9** (3), pp. 273-292, (2021).
- Ciallella A., Pulvirenti M., Simonella S., *Kinetic SIR equations and particle limits*, Atti Della Accademia Nazionale Dei Lincei. Rendiconti Lincei. Matematica E Applicazioni, vol. **32** (2), pp. 295?315, (2021).
- Ciallella, A., Pasquali, D., Go?aszewski, M., D'Annibale, F., Giorgio, I., *A rate-independent internal friction to describe the hysteretic behavior of pantographic structures under cyclic loads*, Mechanics Research Communications vol. **116**, 103761, (2021).
- Spagnuolo, M., Ciallella, A., Scerrato, D., *The Loss and Recovery of the Works by Piola and the Italian Tradition of Mechanics*, Advanced Structured Materials vol. **152**, pp. 315-340, *book chapter*, (2021).

Aretusi G., Ciallella A., *An Application of Coulomb-Friction Model to Predict Internal Dissipation in Concrete*, *Advanced Structured Materials* vol. **127**, pp. 73-86, book chapter, (2021).

Barchiesi, E., Ciallella, A., Scerrato, D., *A Partial Report on the Controversies About the Principle of Virtual Work: From Archytas of Tarentum to Lagrange, Piola, Mindlin and Toupin*, *Advanced Structured Materials*, vol. **152**, pp. 341-377, book chapter, (2021).

Giorgio I., Ciallella A., Scerrato D., *A study about the impact of the topological arrangement of fibers on fiber-reinforced composites: Some guidelines aiming at the development of new ultra-stiff and ultra-soft metamaterials*, *International Journal Of Solids And Structures*, vol. **203**, pp. 73-83, (2020).

Laudato M., Ciallella A., *Perspectives in Generalized Continua*. In: Editors: B. E. Abali I. Giorgio. In *Advanced Structured Materials*, vol. **132**, pp. 1-13, book chapter, (2020).

Ciallella A., *Research perspective on multiphysics and multiscale materials: a paradigmatic case*, *Continuum Mechanics And Thermodynamics*, **32**, 3, pp. 527-539, *Editorial*, (2020).

Javanbakht M., Ghaedi M. S., Barchiesi E., Ciallella A., *The effect of a pre-existing nanovoid on martensite formation and interface propagation: a phase field study*, *Mathematics And Mechanics Of Solids* **26** (1), pp. 90-109, (2020).

Ciallella A., Cirillo E. N. M., *Conditional expectation of the duration of the classical gambler problem with defects*, *Eur. Phys. J. Spec. Top.* **228** pp. 111-128, (2019).

Ciallella A., Cirillo E. N. M., *Linear Boltzmann dynamics in a strip with large reflective obstacles: stationary state and residence time*, *Kinetic & Related Models* **11**(6) pp. 1475-1501, (2018)

Ciallella A., Cirillo E. N. M., Curseu P. L., Muntean A., *Free to move or trapped in your group: Mathematical modelling of information overload and coordination in crowded populations*, *Mathematical Models and Methods in Applied Sciences*, **28**, 1831-1856, (2018).

Ciallella A., Cirillo E. N. M., Sohier J., *Residence time of symmetric random walkers in a strip with large reflective obstacles*, *Physical Review E*, **97**, 052116, (2018).

Ciallella A., *On the linear Boltzmann transport equation: a Monte Carlo algorithm for stationary solutions and residence times in presence of obstacles*, pp.952-960, Conference Proceedings, Aimeta 2017, Salerno (2017).

EDITORIAL ACTIVITY

Member of the editorial board of Mathematics and Mechanics of Solids since October 2022.

Member of the editorial board of Advances in mathematical physics since April 2023.

Guest editor with Dr. E. Barchiesi of the Special Issue ?Advanced Modelling in Multi-scale and Multi-physics?: *Continuum Mechanics and Thermodynamics* Vol 32, issue 3, 2020.

CONGRESSES AND SEMINARS

International Conference on MODELLING COMPLEXITY IN MECHANICS. 25/29 September 2023, Alghero (Italy). Talk title: ?Perspectives in Digital Volume Correlation analysis for metamaterials with large deformations?.

CIMAC XI: Congreso Internacional de Matemática Aplicada y Computacional - Miniworkshop on ?Mathematical models in medicine and epidemiology?, 01-04 August 2023 at Lima (Peru). Talk title: ?Boltzmann-SIR equation: A kinetic theory approach to epidemic modeling? (online).

Seminar at the École normale supérieure Paris-Saclay, 27 July 2023, Gif-sur-Yvette (France), with title ?A DVC-guided exploration of the large displacements regime for pantographic blocks?.

Workshop of the IRP Coss&Vita Metamaterials and biomechanics: from bio-inspiration to bio-metamaterials, 24-27 October 2022, Arpino (Italy). Talk titles: ?Multi-scale design and optimization of an architected composite structure (joint presentation with prof. F. D'Annibale and Dr. A. Casalotti)? & ?Large deformation regime for pantographic blocks: a model-driven approach to DVC-analysis?.

International Conference on Nonlinear Solid Mechanics (ICoNSoM), 13/16 June 2022, Alghero (Italy), Member of the Organizing Committee and speaker. Talk title: ?Numerical modelling and experimental investigations for damage and dissipation phenomena in pantographic sheets?.

Giornata della Ricerca DICEAA, 25 May 2022, L'Aquila (Italy). Presentation title: ?Metamateriali innovativi e applicazioni all'ingegneria? (online).

Up-comech-2022: Workshop on design and analysis of non-classical architected materials

, 23/27 May 2022, Frejus (France). Talk title: ?Rupture mechanism and dissipation phenomena in pantographic sheets under extension test: numerical modeling and experiments?.

Lecturer of the lecture series ?Complementary topics in linear algebra with engineering applications?, M&MoCS Training Camp ? Summer School, August 2019, Giuliano di Roma (Italy).

Organizer and speaker at minisymposium ?New Trends in Mathematical Models for Applications?, in ?Italian Society of Applied and Industrial Mathematics (SIMAI)? congress, Rome, Italy, July 02-06, 2018. Talk title: ?Pedestrian dynamics in dark regions?.

Speaker at ?AIMETA 2017? congress, Salerno, Italy. Talk title: ?Obstacles induced jamming in the linear Boltzmann dynamics?, September 04-07, 2017.

Speaker at ?Assemblea Scientifica GNFM 2017? congress, Montecatini Terme, Italy. Talk title: ?Lorentz gas in a strip with obstacles?, May 04-06, 2017.

Poster session at ?ICMS Complexity Science Winter School?, TU Eindhoven, the Netherlands. Poster: ?Crossing time for linear Boltzmann dynamics in a strip in presence of obstacle?, February 13-17, 2017.