

Christelle Combescure

Assistant Professor

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Research Experience

- 2017-present **Assistant Professor, Mechanics and Civil Engineering**, *Université Paris-Est Marne la Vallée*, France.
- 2015-2017 **Research Engineer, Mechanics**, *Research and Technology Center, Safran*, France.
- 2014-2015 **Post-Doctorate, Mechanics**, *Ec. Polytechnique, Palaiseau*, France.
Funding : Chaire PSA-André Citroën
- 2013-2014 **Post-Doctorate, Mechanics**, *Aerospace Engineering and Mechanics, University of Minnesota, Minneapolis (MN)*, USA.
Funding : National Science Foundation
- 2010 - 2013 **PhD CIFRE, Mechanics**, *Inst. Jean LeRond d'Alembert, Univ. Pierre et Marie Curie, Paris and Electricité De France Research & Development, Clamart*, France.
Funding : Agence Nationale Recherche Technologie, EDF R&D, UPMC
- 2010 **Research Internship 6 months**, *EDF, R&D, Group AMA, Clamart*, France.
- 2009 **Research Internship 4 months**, *Group for Research in Struct. Eng., Polytechnique Montréal*, Canada.

Teaching Experience

- 2017-présent **Assistant Professor**, *Université Paris-Est Marne la Vallée*, France,
Strength of Materials, Eurocodes, Mechanics of Bridges and Tunnels, Initiation to the Finite Element Method, Dynamics of structures, Reliability Methods 192h/year.
- 2016-2017 **Lecturer ST3 et ROB3**, *Polytech'Paris UPMC*, France,
Continuum Media 60h/year.
- 2015-2016 **TA Master 1 Mechanics**, *Univ. Pierre et Marie Curie, Paris*, France,
Behavior of Structures and Materials 60h/year.
- 2010, 2012, **TA Licence 3 Mechanics**, *Univ. Pierre et Marie Curie, Paris*, France,
2015 Continuum Media, Strength of Materials, variational forms 60h/year.

Supervision

- 2019-present **Co-advisor PhD**, *Projet ANR MOMAP*, Valentin Jeanneau,
Subject : Elasticity tensor, elasticity limits and practical building criteria of architected periodic materials.
- 2017-present **Co-advisor PhD**, *Projet ANR MMELED*, Pengfei Li,
Subject : Multiscale numerical modeling and experimental investigation of damage in 3D-printed polymer-glass composites.
- 2015-2018 **Co-advisor PhD**, *Safran-Mines ParisTech (CdM)*, Moubine Al Kotob,
Subject : Competition Localization-Instability-Ductile Failure in elasto-plastic structures.
Defended on Jan,14 2019, now Engineer at Safran Aircraft Engine

Collaborations

- Summer 2019 **Invited researcher**, *Cornell University, USA*, 1 month.
Pr. T. Healey
- Winter 2018 **Invited researcher**, *UT Austin, USA*, 3 months.
Pr. S. Kyriakides
- 2018-present **Member**, *GDR Geometry for Mechanics*, France.
- 2017-present **Member**, *LIA Coss&Vita*, France-Italy.

Collective Responsibilities

- 2019-present **Appointed Member**, *National Committee CNRS, Section 9*, France.
- 2015-2017 **Expert young Doctor**, *HCERES, Paris*, France.

Evaluation

- Journals** International Journal of Solids and Structures, Journal of Elasticity, Continuum Mechanics and Thermodynamics, Archives of Mechanics.
- Projects** ANR.
- PhD** PhD Defense Jury Member and Selection Committees.

Publications

7 Papers

- accepted Symmetry 2020** On the failure of classic elasticity in predicting elastic wave propagation in gyroid lattices for very long wavelengths *Symmetry*
G. Rosi, N. Auffray, **C. Combescure**
- JMPS 2020** Deformation patterns and their stability in finitely strained circular cell honeycombs *J. of the Mechanics and Physics of Solids* p.103976
C. Combescure, R.S. Elliott, N. Triantafyllidis
- IJMS 2020** An extension of the phase field method to model interactions between interfacial damage and brittle fracture in elastoplastic composites *Int. J. of Mechanical Sciences* p.105633
P. Li, J. Yvonnet, **C. Combescure**
- IJNME 2020** A general and efficient numerical method for the detection of loss of ellipticity in elastoplastic structures *Int. J. of Numerical Methods in Engineering* 121(5), 842-866
M. Al Kotob, **C. Combescure**, M. Mazière, T. Rose, S. Forest
- IJSS 2017** Hierarchical honeycomb material design and optimization: Beyond linearized behavior *Int. J. of Solids and Struct.* 115;116 296-318
C. Combescure, R.S. Elliott
- IJSS 2016** Post-bifurcation and stability of a finitely strained hexagonal honeycomb subjected to equibiaxial in-plane loading. *Int. J. of Solids and Struct.* 88;89 296-318
C. Combescure, P. Henry, R.S. Elliott
- IJSS 2015** Dissipative Homogenised Reinforced Concrete (DHRC) constitutive model dedicated to reinforced concrete plates under seismic loading. *Int. J. of Solids and Struct.* 73;74 78-98
C. Combescure, H. Dumontet, F. Voldoire
- IJSS 2013** Homogenised constitutive model coupling damage and debonding for reinforced concrete structures under cyclic solicitations. *Int. J. of Solids and Struct.* 50 (24) 3861–3874
C. Combescure, H. Dumontet, F. Voldoire

International Conferences

- Non-Lin** Insights into the post-bifurcation analysis of highly symmetric structures using group theory.
2019 *Workshop LIA Coss&Vita, Arpino, Italy*
C. Combescure
- ESMC** **Invited talk** Post-bifurcation analysis of highly symmetric structures. *Europ. Solids Mech. Conf., Bologna, Italie*
2018
C. Combescure, R.S. Elliott, N. Triantafyllidis
- USNCTAM** Post-bifurcation analysis of continuous lattices structures. *US Nat. Conf. of Theoretical and Applied Mech., Chicago, USA*
2018
C. Combescure
- IMECE** Post-bifurcation and stability of finitely strained hexagonal honeycomb subjected to equibiaxial in-plane loading. *Int. Mech. Eng. Cong. & Exp., Phoenix, USA*
2016
C. Combescure, R.S. Elliott
- ICTAM** In-plane loading of hexagonal honeycombs: post-bifurcation and stability behavior *Int. Conf. Theoretical & Applied Mech., Montréal, Canada*
2016
C. Combescure, N. Triantafyllidis, R.S. Elliott
- IMECE** Bifurcation & stability of finitely strained cellular solids with curved walls using group theoretical methods. *Int. Mech. Eng. Cong. & Exp., Houston, USA*
2015
C. Combescure, R.S. Elliott, N. Triantafyllidis
- ESMC** Post-bifurcation analysis of hierarchical honeycomb structures in a Material-by-Design approach. *9th European Solid Mech. Conf., Madrid, Spain*
2015
C. Combescure, R.S. Elliott, N. Triantafyllidis
- IMECE** Post-bifurcation analysis of hierarchical honeycombs. *ASME Int. Mech. Eng. Cong. & Exp., 2014, Montréal Canada*
2014
C. Combescure, R.S. Elliott
- USNCTAM** Post-bifurcation analysis of hierarchical honeycombs. *17th U.S. National Congress on Theoretical & Applied Mechanics, 2014, Michigan State University (MI) USA*
2014
C. Combescure, R.S. Elliott
- ESMC** A Global Constitutive Model of Reinforced Concrete Plates coupling Damage and Plasticity for Structures Subjected to Cyclic Solicitations. *8th Europ. Sol. Mech. Conf., Graz, Austria*
2012
C. Combescure, H. Dumontet, F. Voltaire

Languages

French	Native
English	Fluent
Spanish	Moderate
Japanese	Notions

Extra

Arts	Professional performer of Aerial Silks (circus)
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