Florent PLED

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Id ORCID	0000-0003-1389-6507
Nationality	French
Birthdate	September 7, 1984 (38 years old)
Birthplace	Clichy (92 110), France

Assistant Professor
Université Gustave Eiffel
Laboratoire Modélisation et Simulation Multi-Echelle (MSME)
UMR 8208 CNRS

Education and training

2013 - 2014 **Postdoctoral Fellow** in Mechanical Engineering
Research Institute in Civil Engineering and Mechanics (GeM), Ecole Centrale Nantes, France

2009 - 2012 **Ph.D.** in Mechanical Engineering with first class honors
ENS Cachan, Laboratory of Mechanics and Technology (LMT-Cachan), Cachan, France

2008 - 2009 **Master's Year 2: M.S.** in Mechanical Engineering (Advanced Techniques in Structural Computations) with first-class honors
ENS Cachan / Pierre et Marie Curie (Paris VI) University, France

2007 - 2008 **Agrégation**, High-level french national competitive exam for Public Education
Rank: 11th nationally

2006 - 2007 **Master's Year 1: M.S.** in Mechanical Engineering, Materials and Structures with upper second-class honors
ENS Cachan / Pierre et Marie Curie (Paris VI) University, France

2005 - 2006 **Bachelor: B.S.** in Mechanical Engineering and Technology with upper second-class honors
ENS Cachan / Pierre et Marie Curie (Paris VI) University, France

2005 Admission at Ecole Normale Supérieure de Cachan (ENS Cachan), a leading french institution to train teachers and researchers

Teaching and academic experience

Since 2014 **Assistant Professor at Laboratoire Modélisation et Simulation Multi-Echelle (MSME) UMR 8208, Université Gustave Eiffel**, France (192h per year)
Probability theory and Statistics, Structural reliability in Mechanical and Civil Engineering, Numerical analysis, Numerical calculations for structural analysis, Strength of materials, Theory of beams, plates and shells

2012 - 2013 **Teaching assistant at Ecole Polytechnique** at Palaiseau, France (20h)
Structural analysis using the Finite Element Method for linear and nonlinear materials

2009 - 2012 **Teaching assistant at ENS Cachan and Pierre et Marie Curie (Paris VI) University**, France (193h)
Continuum Mechanics (Beam theory, Theorems of energetics), Computational Mechanics (Numerical engineering and design using computational tools, Finite Element Method, Algorithms for solving nonlinear problems), Applied Mathematics (Variational formulation), Verification (Global/goal-oriented error estimation methods)

2010 - 2012 **Teaching assistant at Ecole Polytechnique Féminine (EPF)** at Sceaux, France (60h)

Wave Mechanics and Optics

2006 - 2009 **Teaching assistant at Ecole Militaire de Paris / Enseignement Militaire Supérieur Scientifique et Technique (EMSST)**, Paris, France, option Engineering Sciences
Preparation in Physics and Electrokinetics to the competitive entrance exam to the french military school

2006 - 2007 **Oral examiner in "Classes Préparatoires aux Grandes Ecoles" (competitive examination**
2008 - 2011 **for elite higher education institutes) option PC/PC* (Physics, Chemistry)** at Lycée Louis Pasteur, Neuilly, France (2 to 3h per week)
Intensive preparation in Physic Sciences to the competitive entrance exam to french engineering schools

Research activities

Current research interests

- Uncertainty quantification in computational mechanics and engineering sciences
- Stochastic multiscale modeling of random heterogeneous materials
- Multiscale statistical inverse identification of probabilistic models, Computational stochastic homogenization
- Machine learning, Artificial neural networks
- Multiscale computational methods, Domain decomposition methods

Postdoctoral Fellowship (2013 - 2014)

Topic: Multiscale method with patches for the propagation of localized uncertainties in linear and non-linear stochastic models

Project: ANR-12-MONU-0002 - ICARE - Generalized interfaces and non-intrusive coupling between R&D and standard software for computational mechanics

Laboratory: GeM, Ecole Centrale Nantes, France

Supervisors: A. Nouy, M. Chevreuil

Keywords: Uncertainty quantification and propagation, Multiscale method, Stochastic parametric PDE's, Domain decomposition, Fictitious domain methods, Nonlinear stochastic models, Spectral stochastic methods, Sparse approximation, High-dimensional problems

Ph.D. Thesis (2009 - 2012)

Title: Towards a robust and effective strategy for the control of finite element computations in mechanical engineering

Laboratory: LMT-Cachan, ENS Cachan / Pierre et Marie Curie (Paris VI) University, France

Supervisors: P. Ladevèze, L. Chamoin

Defended on: December 13, 2012 at Ecole Normale Supérieure de Cachan (ENS Cachan)

Keywords: Verification, A posteriori error estimation, Finite element method, Constitutive relation error, Admissible fields, Goal-oriented error estimation, Guaranteed error bounds, Non-intrusive techniques, Saint-Venant's principle

Committee:

Nicolas Moës	Professor at Ecole Centrale Nantes	President
Pedro Díez	Professor at Universitat Politècnica de Catalunya	Reviewer
Martin Vohralík	Senior researcher at INRIA Paris-Rocquencourt	Reviewer
Albert Alarcón	Engineer at EDF R&D	Examiner
Erwin Stein	Professor at Leibniz Universität Hannover	Examiner
Ludovic Chamoin	Assistant professor at ENS Cachan	Advisor
Pierre Ladevèze	Professor at ENS Cachan	Advisor

Research internship during the 2nd year of Master (March - August 2009)

Topic: Comparison of methods for constructing admissible fields in the context of robust goal-oriented error estimation

Laboratory: LMT-Cachan, France

Advisors: L. Chamoin, E. Florentin

Research internship during the 1st year of Master (April - August 2007)

Topic: Numerical simulation of the crushing of foam-filled aluminium tubes
Laboratory: Deakin University, Geelong, Australia
Advisor: W. Yan

Honors and Awards

2013 Eligible participant of the *3rd ECCOMAS PhD Olympiad* selected by the French Computational Structural Mechanics Association (CSMA), ECCOMAS local association (France), 3rd place for CSMA Best PhD Thesis

Publications

Papers in Refereed Journals

2022 L. Chevalier, F. Pled, L. Winkler, F. Wilquin, E. Launay. A multi-model approach for wooden furniture failure under mechanical load. *Mechanics & Industry*, 23, 28, 2022. DOI: 10.1051/meca/2022025. HAL: hal-03887864.

F. Pled, C. Desceliers. Review and Recent Developments on the Perfectly Matched Layer (PML) Method for the Numerical Modeling and Simulation of Elastic Wave Propagation in Unbounded Domains. *Archives of Computational Methods in Engineering*, 29(1), 471-518, 2022. DOI: 10.1007/s11831-021-09581-y. HAL: hal-03196974.

2021 F. Pled, C. Desceliers, T. Zhang. A robust solution of a statistical inverse problem in multiscale computational mechanics using an artificial neural network. *Computer Methods in Applied Mechanics and Engineering*, 373, 113540, 2021. DOI: 10.1016/j.cma.2020.113540. HAL: hal-03000299. ArXiv: 2011.11761.

2020 T. Zhang, F. Pled, C. Desceliers. Robust Multiscale Identification of Apparent Elastic Properties at Mesoscale for Random Heterogeneous Materials with Multiscale Field Measurements. *Materials*, 13(12), 2826, 2020. DOI: 10.3390/ma13122826. HAL: hal-02879369. ArXiv: 2006.14854.

2019 L. Chevalier, F. Pled, F. Zambou, E. Launay. Cyclic virtual test on wood furniture by Monte Carlo simulation: from compression behavior to connection modeling. *Mechanics & Industry*, 20(6), 606, 2019. DOI: 10.1051/meca/2019039. HAL: hal-02321441.

2018 A. Nouy, F. Pled. A multiscale method for semi-linear elliptic equations with localized uncertainties and non-linearities. *Mathematical Modelling and Numerical Analysis*, 52(5), 1763-1802, 2018. DOI: m2an/2018025. HAL: hal-01507489. AriXiv: 1704.05331.

2017 L. Chamoin, F. Pled, P-E. Allier, P. Ladevèze. A posteriori error estimation and adaptive strategy for PGD model reduction applied to parametrized linear parabolic problems. *Computer Methods in Applied Mechanics and Engineering*, 327, 118-146, 2017. DOI: 10.1016/j.cma.2017.08.047. HAL: hal-01584532. ArXiv: 1801.07422.

2016 F. Hild, A. Bouterf, L. Chamoin, H. Leclerc, F. Mathieu, J. Neggers, F. Pled, Z. Tomičević, S. Roux. Toward 4D Mechanical Correlation. *Advanced Modeling and Simulation in Engineering Sciences*, 3(1), 1-26, 2016. DOI: 10.1186/s40323-016-0070-z. HAL: hal-01310582.

2013 P. Ladevèze, F. Pled, L. Chamoin. New bounding techniques for goal-oriented error estimation applied to linear problems. *International Journal for Numerical Methods in Engineering*, 93(13), 1345-1380, 2013. DOI: 10.1002/nme.4423. HAL: hal-01056891. ArXiv: 1704.06688.

2012 F. Pled, L. Chamoin, P. Ladevèze. An enhanced method with local energy minimization for the robust a posteriori construction of equilibrated stress fields in finite element analyses. *Computational Mechanics*, 49(3), 357-378, 2012. DOI: 10.1007/s00466-011-0645-y. HAL: hal-01056871. ArXiv: 1408.6143.

2011 F. Pled, L. Chamoin, P. Ladevèze. On the techniques for constructing admissible stress fields in model verification: Performances on engineering examples. *International Journal for Numerical Methods in Engineering*, 88(5), 409-441, 2011. DOI: 10.1002/nme.3180. HAL: hal-01056705. ArXiv: 1704.06680.

Communications

Invited Lectures in International Conferences

2013 **Invited lecture**, F. Pled, L. Chamoin, P. Ladevèze. Toward alternative bounding techniques for robust goal-oriented error estimation applied to linear problems. *2nd ECCOMAS Young Investigators Conference (YIC 2013)*, Bordeaux, France, September 2-6, 2013. HAL: hal-01057085.

Communications in International Conferences

2023 (Upcoming) F. Pled, C. Desceliers. A data-driven statistical inverse identification method for phase field modeling of fracture in random heterogeneous elastic media. *Engineering Mechanics Institute Conference 2023 (EMI 2023)*, Atlanta, Georgia, U.S., June 6-9, 2023.

2022 F. Pled, C. Desceliers. A data-driven identification method based on neural networks for solving statistical inverse problems in computational mechanics. *13th International Conference on Structural Safety & Reliability (ICOSSAR 2021-2022)*, Shanghai, China, September 13-17, 2022. HAL: hal-03774358.

F. Pled, C. Desceliers. On the Design of Artificial Neural Networks for Solving Statistical Inverse Problems in Computational Biomechanics. *15th World Congress on Computational Mechanics (WCCM XV)*, Yokohama, Japan, July 31-August 5, 2022. HAL: hal-03763600.

I. Satgun, F. Pled, C. Desceliers. Identification of a Phase Field Model for Brittle Fracture in Random Heterogeneous Elastic Media. *15th World Congress on Computational Mechanics (WCCM XV)*, Yokohama, Japan, July 31-August 5, 2022. HAL: hal-03763617.

I. Satgun, F. Pled, C. Desceliers. Phase Field Model for Brittle Fracture in Random Heterogeneous Elastic Media: Forward Numerical Simulations and Sensitivity Analysis. *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022)*, Oslo, Norway, June 5-9, 2022. HAL: hal-03712152.

2021 F. Pled, C. Desceliers. On the Solution of Statistical Inverse Problems using Machine Learning Methods based on Artificial Neural Networks. *16th U.S. National Congress on Computational Mechanics (USNCCM16)*, Chicago, Illinois, U.S., July 25-29, 2021. HAL: hal-03277972.

C. Desceliers, F. Pled. A probabilistic artificial neural network for a robust identification of the random apparent elasticity tensor field at mesoscale. *16th U.S. National Congress on Computational Mechanics (USNCCM16)*, Chicago, Illinois, U.S., July 25-29, 2021. HAL: hal-03278148.

F. Pled, C. Desceliers, A.H. Gandomi. An artificial neural network-based identification method applied to a random elasto-acoustic wave propagation problem in computational biomechanics. *4th International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2021)*, Athens, Greece, June 27-30, 2021. HAL: hal-03253248.

F. Pled, C. Desceliers, T. Zhang. Statistical inverse problem for the mesoscale model of apparent elasticity properties by training an artificial neural network. *4th International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2021)*, Athens, Greece, June 27-30, 2021. HAL: hal-03277962.

F. Pled, C. Desceliers, A.H. Gandomi. Robust identification of geometrical and mechanical properties using artificial neural networks for cortical bone damage prediction. *14th World Congress on Computational Mechanics (WCCM XIV)*, Paris, France, January 11-15, 2021. HAL: hal-03253309.

C. Desceliers, F. Pled, T. Zhang. Artificial neural network for a robust identification of apparent elasticity properties at mesoscale with limited experimental measurements. *14th World Congress on Computational Mechanics (WCCM XIV)*, Paris, France, January 11-15, 2021. HAL: hal-03253340.

2020 F. Pled, C. Desceliers, A.H. Gandomi. Machine learning based on neural networks for the inverse identification of probability distributions - Application to the axial transmission technique for the ultrasonic characterization of damaged cortical bone properties. *XI International Conference on Structural Dynamics (EURODYN 2020)*, Athens, Greece, November 23-26, 2020. HAL: hal-03638124.

2019 F. Pled, C. Desceliers, A.H. Gandomi, C. Soize. Neural network prediction of cortical bone damage using a stochastic computational mechanical model. *3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2019)*, Hersonissos, Crete Island, Greece, June 24-26, 2019. HAL: hal-02175561.

T. Zhang, C. Desceliers, F. Pled. Experimental identification of mesoscopic elasticity tensor field for heterogeneous materials with complex microstructure using multiscale experimental imaging measurements. *3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2019)*, Hersonissos, Crete Island, Greece, June 24-26, 2019. HAL: hal-02176038.

2018 F. Pled, M. Chevreuil, A. Nouy. Multiscale Method with Patches for the Solution of Linear Parabolic Equations with Localized Uncertainties. *13th World Congress on Computational Mechanics (WCCM XIII)*, New York City, U.S., July 22-27, 2018. HAL: hal-01856965.

Z. Chen, F. Pled, L. Chevalier, E. Launay. Identification of the elastic properties of particle boards and stochastic simulation of wood-based furniture. *6th European Conference on Computational Mechanics (ECCM VI)*, Glasgow, UK, June 11-15, 2018. HAL: hal-01817009.

T. Zhang, F. Pled, C. Desceliers. Multiscale identification of apparent elastic properties at meso-scale for materials with complex microstructure using experimental measurements. *6th European Conference on Computational Mechanics (ECCM VI)*, Glasgow, UK, June 11-15, 2018. HAL: hal-01817010.

2017 L. Chamoin, F. Pled, P-E. Allier, P. Ladevèze. Certification of PGD reduced models using a posteriori error estimation and adaptive strategies. *4th International Workshop on Reduced Basis, POD and PGD Model Reduction Techniques (MORTech 2017)*, Seville, Spain, November 8-10, 2017. HAL: hal-01633412.

F. Pled, M. Chevreuil, A. Nouy. A multiscale method with patches for the propagation of localized uncertainties in structural dynamics. *2nd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2017)*, Rhodes Island, Greece, June 15-17, 2017. HAL: hal-01541080.

Z. Chen, F. Pled, L. Chevalier, H. Maklouf, E. Launay. Identification of the Mechanical Properties of Particle Boards and Stochastic Simulation of the Behavior of Furniture. *Computational Methods in Wood Mechanics - from Material Properties to Timber Structures (CompWood 2017)*, Vienna, Austria, June 7-9, 2017. HAL: hal-01541075.

2016 V. Sansalone, D. Gagliardi, S. Naili, C. Desceliers, F. Pled, L. Teresi, S. Gabriele. Image-based multiscale modeling of bone elasticity: how to make the most out of uncertainty? *12th World Congress on Computational Mechanics (WCCM XII)*, Seoul, South Korea, July 24-29, 2016. HAL: hal-01306408.

F. Pled, L. Chamoin, P-E. Allier, P. Ladevèze. On the control of PGD reduced-order approximations: error estimation and adaptivity. *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2016)*, Hersonissos, Crete Island, Greece, June 5-10, 2016. HAL: hal-01306402.

F. Hild, A. Bouterf, L. Chamoin, H. Leclerc, F. Mathieu, J. Neggers, F. Pled, Z. Tomičević, S. Roux. Putting Mechanical Content in DVC: Toward 4D Mechanical Correlation. *Workshop New Challenges in Computational Mechanics (NCCM 2016)*, Ecole Normale Supérieure de Cachan, Cachan, France, May 23-25, 2016. HAL: hal-01324423.

2015 F. Pled, M. Chevreuil, A. Nouy. Multiscale coupling approach for solving high-dimensional stochastic problems featuring localized uncertainties and non-linearities. *eXtended Discretization MethodS (X-DMS 2015)*, Ferrara, Italy, September 9-11, 2015. HAL: hal-01306394.

F. Pled, M. Chevreuil, A. Nouy. Multiscale method with patches for the solution of non-linear stochastic problems with localized uncertainties and non-linearities. *1st International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2015)*, Hersonissos, Crete Island, Greece, May 25-27, 2015. HAL: hal-01155606.

2014 F. Pled, L. Chamoin, P. Ladevèze. On the verification of PGD reduced-order models. *11th World Congress on Computational Mechanics (WCCM XI) - 5th European Conference on Computational Mechanics (ECCM V)*, Barcelona, Spain, July 20-25, 2014. HAL: hal-01057092.

2013 L. Chamoin, P. Ladevèze, F. Pled. Goal-oriented control of PGD-based simulations. *12th U.S. National Congress on Computational Mechanics (USNCCM12)*, Raleigh, North Carolina, U.S., July 22-25, 2013. HAL: hal-01057248.

F. Pled, M. Chevreuil, A. Nouy. Multiscale method with patches for the propagation of localized uncertainties in stochastic models. A. Gravouil, Y. Renard, A. Combescure, eds: *International Conference on Extended Finite Element Methods (XFEM 2013)*, Lyon, France, September 11-13, 2013. HAL: hal-01057088.

Invited lecture, F. Pled, L. Chamoin, P. Ladevèze. Toward alternative bounding techniques for robust goal-oriented error estimation applied to linear problems. *2nd ECCOMAS Young Investigators Conference (YIC 2013)*, Bordeaux, France, September 2-6, 2013. HAL: hal-01057085.

L. Chamoin, P. Ladevèze, F. Pled. Recent advances in the control of PGD-based approximations. J. P. Moitinho de Almeida, P. Díez, C. Tiago, N. Parés, eds: *6th International Conference on Adaptative Modeling and Simulation (ADMOS 2013)*, Lisbon, Portugal, June 3-5, 2013. HAL: hal-01057247.

F. Pled, L. Chamoin, P. Ladevèze. New bounding techniques for goal-oriented error estimation in FE simulations. J. P. Moitinho de Almeida, P. Díez, C. Tiago, N. Parés, eds: *6th International Conference on Adaptative Modeling and Simulation (ADMOS 2013)*, Lisbon, Portugal, June 3-5, 2013. HAL: hal-01056926.

2012 L. Chamoin, P. Ladevèze, F. Pled. Robust control of PGD-based reduced models. *International Workshop on Virtual Materials (IWVM 2012)*, Beijing, China, September 11, 2012. HAL: hal-01057246.

L. Chamoin, F. Pled, P. Ladevèze. Mechanics-based verification method - application to computational models. *23rd International Congress of Theoretical And Applied Mechanics (ICTAM 2012)*, Beijing, China, August 19-24, 2012. HAL: hal-01057245.

L. Chamoin, P. Ladevèze, F. Pled. Goal-oriented control of finite element models: recent advances and performances on 3D industrial applications. *11th Biennal Conference on Engineering Systems Design and Analysis (ESDA ASME 2012)*, Nantes, France, July 2-4, 2012. HAL: hal-01057238.

F. Pled, L. Chamoin, P. Ladevèze. New advances in robust goal-oriented error estimation for FE simulations. *10th World Congress on Computational Mechanics (WCCM X)*, São Paulo, Brazil, July 8-13, 2012. HAL: hal-01056927.

2011 F. Pled, L. Chamoin, P. Ladevèze. Construction of admissible fields and goal-oriented error estimation: Performances on engineering examples. D. Aubry and P. Díez, eds: *5th International Conference on Adaptative Modeling and Simulation (ADMOS 2011)*, Paris, France, June 6-8, 2011. HAL: hal-01056921.

2007 F. Pled, W. Yan, Y. Yamada, C. Wen. Crushing Modes of Aluminium Tubes under Axial Compression. M. Veidt, F. Albermani, B. Daniel, J. Griffiths, D. Hargreaves, R. McAree, P. Meehan, A. Tan, eds: *5th Australasian Congress on Applied Mechanics (ACAM 2007)*, Brisbane, Australia, December 10-12, 2007. *Proceedings of the 5th Australasian Congress on Applied Mechanics (ACAM 2007)*, 1, 178-183, 2007, Engineers Australia. HAL: hal-01056929. ArXiv: 1408.5390.

Communications in National (French) Conferences

2022 M. Noel, F. Pled, L. Chevalier, F. Wilquin, E. Launay. Modélisation de la fissuration dans les matériaux bois par la méthode des champs de phase : simulation numérique d'un essai de compression sur des échantillons en bois d'épicéa. *25ème Congrès Français de Mécanique (CFM 2022)*, Nantes, France, August 29-September 2, 2022. HAL: hal-03774344.

2016 P. Gosselet, J-C. Passieux, A. Nouy, G. Legrain, F. Pled, S. Michel, M. Duval, M. Chevreuil, O. Allix, G. Guguin. Contributions académiques à l'ANR ICARE. *Conférence NAFEMS*, Paris, France, June 8-9, 2016. HAL: hal-01349798.

2013 L. Chamoin, P. Ladevèze, F. Pled. Vérification et validation de modèles dédiées à des quantités d'intérêt. *11ème Colloque National en Calcul des Structures (CSMA 2013)*, Giens, France, May 13-17, 2013. HAL: hal-01057232.

F. Pled, M. Chevreuil, A. Nouy, E. Safatly. Méthode multi-échelle avec patchs pour la propagation d'incertitudes localisées dans les modèles stochastiques. *11ème Colloque National en Calcul des Structures (CSMA 2013)*, Giens, France, May 13-17, 2013. HAL: hal-01056919.

2011 F. Pled, L. Chamoin, P. Ladevèze. Construction de champs admissibles pour le calcul d'erreur locale : application sur des exemples industriels. *20ème Congrès Français de Mécanique (CFM 2011)*, Besançon, France, August 29-September 2, 2011. HAL: hal-01056918.

Communications in National and International Workshops, Seminars and Non-Refereed Conferences

2021 F. Pled. La simulation numérique en sciences de l'ingénieur. *Conférence à l'occasion des Olympiades de Sciences de l'Ingénieur de l'académie de Versailles*, France, May 7, 2021. URL: `https://www.upsti.fr/nos-evenements/olympiades-de-si`.

I. Satgun, F. Pled, C. Desceliers. Phase field model for crack propagation in random elastic media. *Journée du Workshop du Labex MMCD on Multiscale analysis of fracture and damage*, Marne-la-Vallée, France, March 29, 2021.

2019 F. Pled. A Perfectly Matched Layer (PML) method for modeling the propagation of elastic waves in unbounded domains. *Journée scientifique de l'équipe Mécanique du MSME*, Marne-la-Vallée, France, February 4, 2019.

2018 F. Pled. A multiscale method for the propagation of localized uncertainties in linear parabolic equations. *Arizona State University seminar*, Arizona State University (ASU), Tempe, AZ, U.S., August 17, 2018. URL: `https://semte.engineering.asu.edu/seminars/archive`. HAL: hal-01879275.

Z. Chen, F. Pled, L. Chevalier, E. Launay. Caractérisation expérimentale et simulation stochastique du comportement des meubles à base de panneaux de particules. *7èmes journées du GDR 3544 Sciences du bois*, Bordeaux, France, November 20-22, 2018. HAL: hal-01943529.

2017 F. Pled. A multiscale method with patches for the propagation of localized uncertainties in (semi-)linear elliptic and parabolic equations. *Séminaire du Laboratoire de Mécanique des Structures et des Systèmes Couplés (LMSSC)*, Conservatoire National des Arts et Métiers (CNAM), Paris, France, June 30, 2017. URL: `https://www.lmssc.cnam.fr/node/1345`. HAL: hal-01552196.

F. Pled, C. Desceliers, V. Sansalone. Sur la modélisation des incertitudes dans le calcul scientifique : application à la microstructure de l'os cortical. *Journée du MSME*, Novotel de Créteil le Lac, Créteil, France, June 9, 2017.

2016 Z. Chen, L. Chevalier, F. Pled, H. Maklouf, E. Launay. Identification des propriétés mécaniques de panneaux de particules et simulation stochastique du comportement de meubles. *5èmes journées du GDR 3544 Sciences du bois*, Bordeaux, France, November 8-10, 2016. HAL: hal-01436963.

2015 F. Pled. Multiscale domain decomposition method for solving high-dimensional non-linear stochastic problems with localized uncertainties and non-linearities. *Séminaire du Laboratoire de Mécanique des Sols, Structures et Matériaux (MSSMat)*, Ecole Centrale-Supélec, Châtenay-Malabry, France, November 19, 2015. HAL: hal-01308256.

F. Pled. Méthode multi-échelle avec patchs pour la résolution de problèmes stochastiques non-linéaires avec sources d'incertitudes et non-linéarités localisées. *Journée du MSME*, auditorium de l'ICMPE, Thiais, France, June 5, 2015.

2013 F. Pled, M. Chevreuil, A. Nouy, E. Safatly. A multiscale domain decomposition method for the solution of stochastic partial differential equations with localized uncertainties. *Journée des doctorants du GeM*, Nantes, France, May 2013.

Professional activities and scientific responsibilities

Membership of Scientific Committees or Organizing Committees of International and National Conferences

2017 Member of the Local Organization Committee, *CMCS 2017 - Computational modeling of Complex Materials across the Scales*, Paris, France, November 7-9, 2017. URL: https://cmcs2017.sciencesconf.org.

2013 Member of the Local Organization Committee, *YIC 2013 - 2nd ECCOMAS Young Investigators Conference*, Bordeaux, France, September 2-6, 2013. URL: https://yic2013.sciencesconf.org.

Organization of International Conferences, Mini-Symposia (MS) in International Conferences and Workshops

2022 Co-organizer of MS 1314: Statistical Inverse Problems and Related Stochastic Optimization Methods for Random Heterogeneous Materials, F. Pled, C. Desceliers, M. Arnst. *15th World Congress on Computational Mechanics (WCCM XV)*, Yokohama, Japan, July 31-August 5, 2022. URL: https://www.wccm2022.org/minisymposia.html#a1300.

Co-organizer of MS 42: Uncertainty Quantification in material sciences, F. Pled, C. Desceliers, M. Arnst, C. Soize. *8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022)*, Oslo, Norway, June 5-9, 2022. URL: https://www.eccomas2022.org/frontal/MSList.asp.

2021 Co-organizer of MS 309: Data-driven Science with Uncertainty Quantification, Machine Learning, and Optimization, J. Stewart, K. Garikipati, R. Ghanem, M. Bessa, C. Desceliers, A. Figueroa, M. Mignolet, F. Pled, C. Soize. *16th U.S. National Congress on Computational Mechanics (USNCCM16)*, Chicago, Illinois, U.S., July 25-29, 2021. URL: http://16.usnccm.org/congressMS.

Co-organizer of MS 184: Data-driven science with uncertainty quantification, machine learning, and optimization, C. Desceliers, C. Soize, J. Stewart, A.F. Alvarez, K. Garikipati, M. Bessa, M. Mignolet, F. Pled, R. Ghanem. *14th World Congress on Computational Mechanics (WCCM XIV)*, Paris, France, January 11-15, 2021. URL: https://wccm-eccomas2020.org/frontal/MSList.asp.

Examination of Thesis and HDR (Habilitation Thesis)

2021 Member of the jury for the PhD thesis defense of H.N. Nguyen, entitled "New numerical strategies for robust, consistent, and computationally efficient model identification from full-field measurements", under the supervision of L. Chamoin and C. Ha Minh at Laboratory of Mechanics and Technology (LMT-Cachan), Université Paris-Saclay, France, May 21, 2021. URL : https://www.theses.fr/2021UPAST061.

Reviewer for International Journals

Since 2018 International Journal for Uncertainty Quantification (IJUQ) (1)

Since 2017 Mathematical Problems in Engineering (MPE) (1)

Participation to Recruiting Committees for Assistant or Full Professors positions

May 2019 Assistant Professor position at INSA Toulouse, France

Participation to PhD Monitoring Committee for PhD students

2022 - PhD student: H. Boué
Topic: Digital twin for the generation and control of acoustic and thermal fields for multi-scale and multi-physics non-destructive evaluation of materials
Laboratory: Institut de Mécanique et d'Ingénierie de Bordeaux (I2M), Université de Bordeaux, France
Doctoral school: SPI - Sciences Physiques et de l'Ingénieur #209
Supervisors: A. Meziane
Co-supervisors: A. Giremus, M-M. Groz

2021 - PhD student: A. Sinha
Topic: Optimisation of innovative acoustic treatment of engines for green aviation, using numerical simulations and machine learning
Laboratory: Modélisation et Simulation Multi Echelle (MSME), Université Gustave Eiffel, France
Doctoral school: SIE - Sciences, Ingénierie et Environnement #531
Supervisor: C. Desceliers

2019 - 2022 PhD student: J. Nespoulous
Topic: Constrained optimization under uncertainty of the driver?s command for energy saving of high-speed trains using computational stochastic nonlinear dynamics and statistics
Laboratory: Modélisation et Simulation Multi Echelle (MSME), Université Gustave Eiffel, France
Doctoral school: SIE - Sciences, Ingénierie et Environnement #531
Supervisor: C. Soize

2018 - 2020 PhD student: J. Reyes
Topic: Stochastic multilevel reduced-order computational model in vibroacoustics applied to automobiles
Laboratory: Modélisation et Simulation Multi Echelle (MSME), Université Paris-Est Marne-la-Vallée (UPEM) devenue Université Gustave Eiffel, France
Doctoral school: SIE - Sciences, Ingénierie et Environnement #531
Supervisor: C. Soize

2018 - 2020 PhD student: V. Dangla
Topic: Robust design of acoustic treatment for nacelle noise reduction using computational aeroacoustics and uncertainty quantification
Laboratory: Modélisation et Simulation Multi Echelle (MSME), Université Paris-Est Marne-la-Vallée (UPEM) devenue Université Gustave Eiffel, France
Doctoral school: SIE - Sciences, Ingénierie et Environnement #531
Supervisors: C. Soize, C. Desceliers

2017 - 2019 PhD student: Q. Akkaoui
Topic: Dynamique numérique des structures avec non-linéarités géométriques couplées avec des fluides acoustiques en présence de ballottement et de capillarité : quantification des incertitudes
Laboratory: Modélisation et Simulation Multi Echelle (MSME), Université Paris-Est Marne-la-Vallée (UPEM) devenue Université Gustave Eiffel, France
Doctoral school: SIE - Sciences, Ingénierie et Environnement #531
Supervisor: C. Soize

2017 - 2019 PhD student: M. Nesterova
Topic: Reliability of structures exposed to traffic and environmental loads
Laboratory: Expérimentation et Modélisation pour le Génie Civil et Urbain (EMGCU), Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR) devenu Université Gustave Eiffel, France
Doctoral school: SIE - Sciences, Ingénierie et Environnement #531
Supervisor: C. Soize

2017 - 2019 PhD student: A. Picou
Topic: Robust analysis under uncertainties of bladed disk vibration with geometrical nonlinearities and detuning
Laboratory: Modélisation et Simulation Multi Echelle (MSME), Université Paris-Est Marne-la-Vallée (UPEM) devenue Université Gustave Eiffel, France
Doctoral school: SIE - Sciences, Ingénierie et Environnement #531
Supervisor: C. Soize

Participation to pedagogical and human projects

2016 - 2018 Member of the project team IDEA of the program "Investing for the Future": Pedag'Innov and Eval'Innov programs on the educational evaluation and pedagogical innovation through distance learning. URL: http://idea.univ-paris-est.fr/fr/index.html.

Administrative and collective responsibilities

Since 2022 Coordinator of the research theme "Probabilistic approaches in mechanics" of the Fédération Francilienne de Mécanique - Matériaux, Structures, Procédés (F2M-CNRS FR 2609). URL: https://f2m.cnrs.fr/la-federation/themes-de-recherche/approches-probabilistes-en-mecanique.

Since 2020 Master coordinator in M.S. Engineering Projects in Civil Engineering at the Institut Françilien des Sciences Appliquées (IFSA) at Université Gustave Eiffel, France.

Since 2020 Pedagogical coordinator in Mechanics in B.S. Physics and Chemistry at the Institut Françilien des Sciences Appliquées (IFSA) at Université Gustave Eiffel, France.

Since 2020 Elected member of the Board of the Laboratory Modélisation et Simulation Multi Echelle (MSME) of Université Gustave Eiffel, France.

Since 2018 Elected member of the Permanent Recruitment Committee (teachers/lecturers and researchers) of the National (French) Council of Universities in sections 60-62 at Université Gustave Eiffel (formerly Université Paris-Est Marne-la-Vallée), France.

2017 - 2019 Elected member of the Board of the Laboratory Modélisation et Simulation Multi Echelle (MSME) of Université Paris-Est Marne-la-Vallée (UPEM), France.

2011 - 2012 Pedagogic head of the bi-weekly meeting of Doctoral School of Practical Sciences (EDSP) of Cachan, France.

2009 - 2010 Member of the Organizing Committee for the weekly meetings of "Structures and Systems" Division at Laboratory of Mechanics and Technology (LMT-Cachan), Cachan, France.

2006 - 2007 Vice-President of the Sports Committee at ENS Cachan, France.

Advising and supervising activities

Doctoral students

2021 - 2024 PhD student: M. Noel
Title: On the prediction of the mechanical resistance of connections, in static and fatigue, between furniture elements during standardized validation tests
Financial support: Université Gustave Eiffel
Laboratory: MSME, Université Gustave Eiffel, France
Supervisors: L. Chevalier (50%), F. Pled (50%)

2020 - 2022 PhD student: I. Satgun
Title: Stochastic modeling and identification of random material and geometrical properties using machine learning methods for crack propagation in random heterogeneous elastic media
Financial support: Université Gustave Eiffel
Laboratory: MSME, Université Gustave Eiffel, France
Supervisors: C. Desceliers (50%), F. Pled (50%)
Stopped on: August 31, 2022 at Université Gustave Eiffel

2016 - 2019 PhD student: T. Zhang
Title: Multiscale statistical inverse problem for the identification of random fields of elastic properties
Financial support: UPEM
Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France
Supervisors: C. Desceliers (70%), F. Pled (30%)
Defended on: December 11, 2019 at Université Paris-Est Marne-la-Vallée

2015 - 2018 PhD student: Z. Chen
Title: Virtual simulation and validation tests for furniture - plates based furniture
Financial support: CIFRE joint with FCBA (the French Institute of Technology for Forest-based and Furniture Sectors)
Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France
Supervisors: L. Chevalier (40%), F. Pled (60%)
Defended on: January 28, 2019 at Université Paris-Est Marne-la-Vallée

Master students in Master's Year 2

Mar. - June 2022	Student: B.T. Lai Topic: Analysis and modeling of shock tests on furniture Laboratory: MSME, Université Gustave Eiffel, France Advisors: L. Chevalier (75%), F. Pled (25%)
Mar. - June 2021	Student: T.T. Mai Topic: Analysis and modeling of shock tests on furniture Laboratory: MSME, Université Gustave Eiffel, France Advisors: L. Chevalier (50%), F. Pled (50%)
Oct. 2020 - Apr. 2021	Student: L. Winkler Topic: A multi model approach for spruce wooden bed validation failure under mechanical load Laboratory: MSME, Université Gustave Eiffel, France Advisors: L. Chevalier (50%), F. Pled (50%)
Mar. - June 2020	Student: M.Q. Doan Topic: Analysis and modeling of shock tests on furniture Laboratory: MSME, Université Gustave Eiffel, France Advisors: L. Chevalier (50%), F. Pled (50%)
Mar. - June 2020	Student: I. Satgun Topic: Identification of phase field fracture model using artificial neural networks Laboratory: MSME, Université Gustave Eiffel, France Advisors: C. Desceliers (50%), F. Pled (50%)
Mar. - June 2019	Student: Q.D. Ha Topic: Analysis and modeling of shock tests on furniture Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France Advisors: L. Chevalier (50%), F. Pled (50%)
Mar. - June 2018	Student: F. Zambou Topic: Identification of the behavior of wood under cyclic solicitations in the directions orthogonal to the fibers orientation Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France Advisors: L. Chevalier (50%), F. Pled (50%)
Nov. 2017 - Mar. 2018	Student: M. Cabocel Topic: Identification of a homogenized rheological constitutive model for reinforced concrete structures under cyclic or seismic solicitations Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France Advisors: C. Combescure (50%), F. Pled (50%)
Mar. - June 2017	Student: A.D. Le Topic: Stochastic identification of the anisotropic and heterogeneous behaviour of wood by image analysis Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France Advisors: L. Chevalier (50%), C. Desceliers (25%), F. Pled (25%)
Mar. - June 2016	Student: T.S. Nguyen Topic: Stochastic identification of the anisotropic and heterogeneous behaviour of wood by image analysis Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France Advisors: L. Chevalier (50%), C. Desceliers (25%), F. Pled (25%)
Mar. - June 2015	Student: H.T. Nguyen Topic: Multiscale method with patches for the non-intrusive coupling of models Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France Advisor: F. Pled (100%)
Mar. - Aug. 2012	Student: K. Kergrene Topic: New verification tools for the control of reduced models through Proper Generalized Decomposition Laboratory: LMT-Cachan, ENS Cachan, France Advisors: L. Chamoin (50%), F. Pled (50%)

Master students in Master's Year 1

Apr. - May 2019	Student: N. Pauly Topic: Multiscale method for the propagation of localized cracks Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France Advisors: F. Pled (100%)
Apr. - May 2017	Student: P. Lacorre Topic: Multiscale method for the solution of hyperbolic equations with localized uncertainties Laboratory: GeM, Université de Nantes, France Advisors: M. Chevreuil (50%), F. Pled (50%)
Apr. - May 2015	Student: Y. Yu Topic: Stochastic multiscale modeling of cortical bone elasticity based on high-resolution imaging Laboratory: MSME, Université Paris-Est Marne-la-Vallée, France Advisors: C. Desceliers (50%), F. Pled (50%)

Undergraduate students

Since 2014	Adviser of 31 undergraduate students at Ecole Supérieure d'Ingénieurs de Paris-Est (ESIPE) with a major in Mechanical or Civil Engineering, Université Gustave Eiffel (formerly Université Paris-Est Marne-la-Vallée), France.

Research Contracts and Grants (funded)

2016 - 2018	CIFRE contract joint with FCBA (the French Institute of Technology for Forest-based and Furniture Sectors) for the PhD thesis of Z. Chen under the supervision of L. Chevalier and F. Pled (amount: 3×12 k€ $= 36$ k€)
2017	Financial support of the French Association of Mechanics (Association Française de Mécanique - AFM) and the French National Committee of Mechanics (Comité National Français de Mécanique - CNFM) for the participation to an international conference (UNCECOMP 2017) as a young researcher (amount: 500 €)

Personal skills and competences

Language skills	French: native English: advanced, read, written and spoken, TOEIC 940 points (obtained in 2008) German: basic, read, written and spoken Latin and Ancient Greek: basic, read
Computer skills and competences	Scientific softwares: MATLAB, Maple, Gmsh, ParaView, Cast3m, ABAQUS, RDM6, Graitec Advance Structure, Robot Structural Analysis, CATIA Programming languages: C/C++, Python, Metil Operating systems: Linux, Mac & Windows, associated office automation tools Other softwares: LaTeX, Beamer
Mobility	Fully mobile, International car driving licence

Personal interests

Sports	Soccer (Member of the University Soccer Team), Skiing
Leisure - Hobbies	Music (Trumpet), Board and card games, Video games, Cooking, Traveling and Experiencing different cultures