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Born : 05/05/1974
Google Scholar : https://scholar.google.ca/citations?user=EcVydJIAAAAJ&hl=fr

Education

28/11/2008	**Habilitation thesis** in Engineering sciences, Université Paris-Est.
19/03/2004	**Ph.D** in physical acoustics, French Atomic Energy Commission, CEA-Saclay. «A model-based inverse method to locate scatterers in a cladded component inspected by ultrasonic waves».
1999- 2000	**Research assistant** at the Saint-Gobain / CNRS Glass Surface and Interface laboratory. « Adhesive contact of viscoelastic media ».
1998 - 1999	**M.S.** in Physical Acoustics, Université Paris Diderot.
1995 - 1998	**B.S.** in mechanical engineering, **Ecole Polytechnique** (X95).

Employment history

11/2021 –	**First class Senior Research Director (DR1),** CNRS (National Center for Scientific Research), mechanics and acoustics section. Permanent position in the Multiscale Modeling and Simulation Laboratory.
09/2016 – 10/2021	**Second class Senior Research Director (DR2),** CNRS (National Center for Scientific Research).
08/2015 -	**Adjunct Professor,** Department of Mechanical Engineering, Ecole de Technologie Supérieure, Montreal, Canada.
06/2010 – 09/2016	**First class Research Associate (CR1),** CNRS. Permanent position in the Multiscale Modeling and Simulation Laboratory.
10/2007 - 05/2010	**First class Research Associate (CR1),** CNRS, Bioengineering and Biomaterials laboratory, Université Paris-Diderot.
09/2005 - 09/2007	**Assistant Professor,** Université Paris-Est. Biomechanics and Biomaterials laboratory.
04/2004 - 08/2005	**Post-Doctoral fellow**, Parametric Imaging Laboratory, CNRS – UPMC.

Main Research Interests

- Biomechanics of the bone-implant interface, implant biomechanics
- Bone & Implant Quantitative Ultrasound
- Biotribology
- Modeling and simulation: finite element modeling
- Bone remodeling, mechanobiology, osseointegration
- Acoustic characterization of complex materials, wave propagation in complex media
- Theoretical and experimental biomechanics of bone and implants
- Adhesive contact and fracture mechanics
- Quantitative Ultrasonic Imaging, signal and image analysis
- Development of experimental multimodality procedures
- Multiphysical characterization of materials
- Simulation methods in computational mechanics, multiscale approaches
- Inverse problem, data inversion, parameter identification

Funding ID

2022-2024 **European Research Council (ERC) Proof of Concept grant, H2020.** Investigateur Principal. Projet Impactor. “Development of an instrumented hammer to assess the stability of hip implant during surgery: assessment of the commercial feasibility”.

2021-2025 **Agence Nationale de la Recherche.** Partner of the project ANR OrthAncil (CE19) : Development of an optimized instrumentation for total hip surgery.

2021 **SATT Erganéo, Projet Génération PI.** Investigateur Principal. Projet Smart-Hammer. “Développement d’un marteau instrumenté pour l’estimation peropératoire de la stabilité d’une prothèse totale de hanche (PTH) non cimentée”.

2021 **SATT Erganéo, Projet Génération PI.** Investigateur Principal. Projet RhinoBlast. “Développement d’un marteau instrumenté pour les ostéotomies en rhinoplastie”.

2021 **SATT Erganéo, Projet Génération PI.** Investigateur Principal. Projet Craniostenose “Développement d’un marteau instrumenté pour la craniosténose”.

2021-2023 **Marie Sklodowska-Curie Actions (MSCA) Individual Fellowships (IF), H2020.** Superviseur. Projet MidPoint. “Multiscale design of porous implants with a biomimetic functionally graded cellular material”.

2020-2022 **European Research Council (ERC) Proof of Concept grant, H2020.** Investigateur Principal. Projet OsseoWave. “Commercial feasibility of a quantitative ultrasound medical device: a patient-specific decision support system for the estimation of dental implant stability”.

2020-2022 **Agence Nationale de la Recherche.** Investigateur Principal. Projet MRSEI PrepaFET : Ultrasons quantitatifs pour le contrôle et la stimulation de l'ostéointégration d'implants osseux : une approche theranostique basée sur la simulation

2020-2024 **Projet IRP** LAFCUS Laboratoire Franco-Canadian de Recherche Ultrasonore. CNRS – Université Paris-Est – AMU - ETS Montréal – Université de Montréal. Porteur Français. Ce projet inclue 14 chercheurs permanents.

2019-2020 **Projet CNRS Prématuration** Ostéome. Investigateur Principal. Développement d’un marteau instrumenté pour la chirurgie maxillofaciale.

2018-2020 **Marie Sklodowska-Curie Actions (MSCA) Individual Fellowships (IF), H2020.** Superviseur. Projet BOMB. “Multi-scale BiOmechanical characterization of peri-iMplant Bone tissue: influence of the environment.”

2016-2020 **European Research Council (ERC) consolidator grant, H2020.** Investigateur Principal. Projet BoneImplant. Panel PE8: Product and process engineering. “Monitoring bone healing around endosseous implants: from multiscale modeling to the patient's bed”.

2018-2020 **Marie Sklodowska-Curie Actions (MSCA) Individual Fellowships (IF).** 173k€. Supervisor. Project *Bomb*. “Multi-scale BiOmechanical characterization of peri-iMplant Bone tissue: influence of the environment.”

2014-2017 **French Research National Agency.** 580 k€. Co-PI with a maxillofacial surgeon. Project OsseoWave. The aim of this translational project is to obtain

	the CE marking of an ultrasonic medical device dedicated the follow-up of dental implants osseointegration.
2015-2017	**Projet PICS** MoSiME Franco-Argentin. CNRS-CONICET. Porteur cotré Français. "Modeling and Simulation in Multidisciplinary engineering". Ce projet inclue 40 chercheurs permanents du CNRS et du CONICET.
2014-2016	**Agence Nationale de la Recherche.** Co-porteur du projet OsseoWave : Développement d'un dispositif ultrasonore pour l'estimation de l'ostéointégration d'implants osseux. Partenaire : Service de Chirurgie Plastique, Reconstructrice et Esthétique de l'hopital Henri Mondor.
2014	**Région Ile-de-France et Oseo**. Aide à la maturation de Projet (Aima Laboratoire). Développement d'un marteau d'impact pour l'estimation de la stabilité de l'implant cotyloïdien.
2010-2015	**University of Paris-Est.** 90 k€. PI. Support for multidisciplinary projects in osteoarticular research.
2011-2013	**French Research National Agency.** 272 k€. PI. Project WaveImplant. Development of a monitoring tool dedicated the follow-up of osseointegration of dental implants. Funding used for transfer activities and to design and optimize an ultrasound device which will be used by dental surgeons.
2011-2013	**French Blood institute.** 130 k€. Co-applicant. Ultrasound measurements to retrieve the evolution of the biomechanical properties (elastic properties and microstructure) of intervertebral lumbar disk regenerated using mesenchymatous stem cells.
2010-2011	**OSEO** (French National Innovation agency). 70 k€. PI. Support for clinical transfer of an ultrasound device for dental implant ultrasonic evaluation of osseointegration.
2010	**Japanese Society for Promotion of Science.** PI. 7 k€. Analytical models for the ultrasonic propagation in bone: coupling independent and multiple scattering with viscoelasticity.
2008-2009	**Institute of Information and Engineering Sciences of CNRS.** PI. 19k€. Experimental set up for the ultrasonic characterization of biomaterials, which will be used in BoneImplant.
2006-2009	**French Research National Agency.** Co-applicant. Total: 370 k€. Acoustical modelling and simulation for the ultrasonic characterization of bone in presence of uncertainties: a stochastic approach.

Prize and awards

2011	Laureate of the "Expert" price of the Innovation Challenge, MeetInov, in the research category, INPI.
2010	Laureate of the National Contest for innovating technology start-up creation, OSEO, French Ministry of Education and Research.
2005	Honorable mention of the R. W. B. Stephens price, congress Ultrasonic International UI'05/WCU (Beijing).

International relationship

08/2015-07/2016	Visiting professor in the Department of Mechanical Engineering, Ecole de Technologie Supérieure, Montreal, Canada.
2015-2017	Scientific leader of a Franco-Argentinean project "Modeling and Simulation in Multidisciplinary engineering" including 40 permanent researchers (CNRS-CONICET).
11/2011	Visiting researcher (1 month total) in the Dept of Mechanical Engineering, Keio University, Japan.
03/2010	Visiting researcher (2 months) in the Dept of Micro Engineering, Kyoto University, Japan.
03/1998	Master degree Internship (5 months) in the Department of Mechanical Engineering, M.I.T. (Cambridge, MA, USA). Pendelluft biomechanical flow in symmetric airway bifurcations.

Teaching Activities

2016	Course *Ultrasound imaging and characterization*, Master course. ETS, Montreal. 40 hours.
2007-2015	Course *Ultrasound medical Imaging*, Master Engineering Sciences and Applications, mention Signals and Images in Medicine, UPEC.
2007-2015	Course *Mechanical waves*, Master Engineering Sciences and Applications, UPEC.
2004-2015	Course *Acoustical Imaging*, Dynamic, Structures, Materials and coupled systems, Ecole Centrale Paris.
2008-2015	Course *Endosseous and Dental Biomaterials*, Master Biomaterials, University Paris 13.
2009-2015	Course *Bone Imaging*, Master Medical Imaging, University Paris 7.
2010-2015	Course *Bone Biomechanics*, Institut Supérieur des Biosciences de Paris.
2005-2008	Course *Biomechanics of porous media*, Master Engineering Sciences and Applications, UPEC.
2005-2007	Course *Numerical analysis and scientific computation*, Master Engineering Sciences and Applications, UPEC.
2002-2005	Tutorial *Continuum mechanics, general mechanics and Structural mechanics*, École Centrale Paris.

Mentoring Activities

Post-doc & Engineers

2021-2023	Lucas Collabela. Ingénieur de recherche. *Homogénéisation de l'os cortical.*
2021-2023	Elin Tornquist. Ingénieur de recherche. *Méthodes d'imagerie à haute résolution pour la caractérisation multimodale de l'os cortical.*
2020-2021	Yoann Hériveaux. Ingénieur de recherche. *Mesure multimodale de la stabilité implantaire.*
2019-2020	Léo Lamassoure. Ingénieur de recherche. *Développement d'un Marteau d'impact pour la rhinoplastie.*
2018-	Sophie LeCann. *Multi-scale BiOmechanical characterization of peri-iMplant Bone tissue: influence of the environment.*

2018-	Yunsang Kwak. *Modeling the interaction between an ultrasonic wave and the bone-implant interface.*
2017-	Maria-Letizia Raffa. *Modeling the bone-implant interface.*
2017-	Olivier Tettart. *Regulatory issues.*
2017-	Alexis Hubert. *Bone-implant interface.*
2015-2017	Antoine Tijou. *Development of an impact hammer for orthopedic surgeons*.
2013-2018	Romain Vayron. *Optimization of the ultrasound device for dental implant stability assessment.*
2011-2012	Vincent Mathieu. *Development of impact-based methods for the estimation of endosseous implant stability.*
2011-2012	Domitille Loriot. *Optimization of the electronics driving an ultrasound device*.

PhD Students

2021-	Francesco Silvagni. *Développement d'un dispositif médical pour la mesure de la stabilité d'implants dentaires.* Co-directeur de thèse.
2021-	Manon Bas. *Développement d'un marteau instrumenté pour l'ostéotomie en chirurgie plastique.* Co-directeur de thèse.
2020-	Claire Bastard. *Développement d'un marteau instrumenté pour l'ostéotomie tibiale.* Co-directeur de thèse.
2019-	Anne-Sophie Poudrel. *Développement d'un marteau instrumenté pour la caractérisation de la stabilité implantaire.* Directeur de thèse.
2017-2021	Hugues Albini Lomami. *Implant stability in orthopedic surgery*.
2017-2020	Manon Fraulob. *Mechanical behavior of the bone-implant interface*.
2017-2020	Yoann Heriveaux. *Ultrasound response of the bone-implant interface*.
2017-2021	Florian Guillaume. *Tissue engineering of the bone-implant interface*. Franco-Canadian co-tutelle.
2017-2021	Katharina Immel. *Modeling the bone-implant interface*. Franco-German co-tutelle.
2015-2019	Annie Levasseur. *Development of ultrasonic stimulation techniques in bone engineering*, Co-supervisor. Franco-Canadian collaboration.
2015-2020	Shreyank Gupta. *Effect of the skull on the ultrasonic propagation in transcranial Doppler Ultrasound*, Co-supervisor. Franco-Canadian collaboration.
2015-2018	Daniel Pereira. *Cortical bone ultrasonic characterization using guided waves*, Co-supervisor. Franco-Canadian collaboration.
2016-2018	Arnaud Dubory. *Interface os-implant titane et ingénierie tissulaire.*
2013-2017	Romain Bosc, *Clinical validation of an ultrasonic device for dental implant stability assessment.* PhD supervisor.
2012-2015	Adrien Michel, *Development of acoustical methods for orthopedic surgery*. PhD supervisor.
2012-2015	Séraphin Guipéri, *An ultrasound approach for per operative bone tissue characterization*. PhD supervisor.
2010-2013	Romain Vayron, *Bone remodeling and biomechanical implant stability*. PhD supervisor.
2008-2011	Vincent Mathieu, *Ultrasonic methods for dental implant stability estimation*. PhD supervisor.
2007- 2011	Mai-Ba Vu, *Mechanical modeling for ultrasound characterization in presence of incertitude*. PhD co-supervisor.

2004-2008	Belfor Galaz, *Relationship between structural and acoustical properties of ultrasound contrast agents*. PhD co-supervisor.
2005-2008	Magali Sasso, *Signal processing and treatment for ultrasonic bone characterization*. PhD co-supervisor.

Major achievements

Edited Book and Book Chapters

- **Haiat G**., "Linear ultrasonic behavior of cortical bone", *Reviews of ultrasound methods for cortical bone*
- Laugier P., **Haiat G**. "Introduction of the physics of ultrasound". *Comprehensive introduction to acoustic,* in "Quantitative ultrasound of bone", Laugier P. and **Haiat G.** (Eds.), Springer (2011).
- **Haiat G**., "Imagerie ultrasonore : du contrôle non destructif à la biomécanique", Presses Académiques Francophones, 125 p, 2012. ISBN 978-3-8381-7511-9

Articles in major international peer reviewed journals

Experimental bone quantitative ultrasound

- **Haiat G.** *et al.*, "In vitro speed of sound measurement at intact human femur specimens", *Ultrasound med. biol.* **31 (7)** (2005), pp. 987–996. *This study is the first to show the correlation between acoustic velocity and bone density in human femurs. Collaboration with Germany.* Cited 36 times.
- **Haiat G.** *et al.*, "Effects of frequency dependent attenuation and dispersion on different speed of sound measurements on human intact femur", *IEEE Trans. Ultrason. Ferroelectr. Freq. Control.,* **53 (1)** (2006), pp 39-51. *This paper studies the effect of the dispersive properties of trabecular bone. Cited 38 times.*
- Sasso M., **Haiat G**. *et al.*, "Dependence of ultrasonic attenuation to bone mass and microstructure in bovine cortical bone", *J. Biomech.* **41(2)** (2008) pp 347-55. Cited 42 times. **Haiat, G.** *et al.*, "Ultrasonic velocity dispersion in bovine cortical bone: an experimental study", *J Acoust Soc Am.* **124(3)** (2008) pp 1811-21*, selected as outstanding paper in the* ***Virtual Journal of Biological Physics Research*** **16** (7). *These 2 papers investigate for the 1st time the dispersive behavior (in terms of attenuation and velocity dispersion) of the ultrasonic propagation in trabecular bone. Collaboration with Doshisha University (Japan).*

Simulation of bone quantitative ultrasound

- **Haiat G.** *et al.,* "Variation of ultrasonic parameters with microstructure and material properties of trabecular bone: a 3D model simulation.", *J Bone Miner Res.* **22(5)** (2007), pp 665-74. *This multidisciplinary study investigates the dependence of attenuation and velocity on geometrical and biomechanical changes of trabecular bone using an* in silico *approach of osteoporosis. Cited 85 times.*
- **Haiat G.** *et al.,* "Fast wave propagation in trabecular bone: numerical study of the influence of porosity and structural anisotropy", *J Acoust. Soc. Am.* **123(3)** (2008) pp 1694-705. *This study investigates the conditions on trabecular bone properties (anisotropy and volume fraction) necessary to distinguish the two longitudinal wave modes propagating in this poroelastic medium. Cited 61 times.*
- **Haiat, G.** *et al.*, "Influence of a gradient of material properties on ultrasonic wave propagation in cortical bone: application to axial transmission", *J Acoust Soc Am.* **125(6)** (2009) pp 4043-4052. Cited 20 times. Naili, S., (…), **Haiat, G.** "Influence of viscoelastic and viscous absorption on ultrasonic wave propagation in cortical bone: application to axial transmission", *J Acoust Soc Am.* **127(4)** (2010) pp 2622-34. Cited 18 times. *These 2 papers accounts for the effect of the heterogeneity of cortical bone on its ultrasonic response based on spatial variations of its anisotropic and viscoelastic properties.*

- **Haiat G.**, (…) and Zysset P., "Relationship between ultrasonic parameters and apparent bone elastic modulus bone: a numerical approach", *J. Biomech*. **42(13)** pp. 2033-9. *This paper compares different methods of bone assessment and shows that ultrasound can predict bone strength. Cited 30 times.*

Bone-implant interface

- **Haiat, G.**, Wang, H.L. and Brunski, J.B., "Effects of biomechanical properties of the bone-implant interface on dental implant stability: from *in silico* approaches to the patient's mouth", *Annu Rev Biomed Eng.***11(16)** (2014) pp. 187-213. I was asked by the committee of this journal (IF=15) to do a review on biomechanical aspects of osseointegration phenomena with 2 researchers from the USA.
- Vayron, R. (...) and **Haïat, G.** "Evolution of bone biomechanical properties at the micrometer scale around titanium implant as a function of healing time", *Phys Med Biol* **59(6)** (2014) pp 1389-1406. Mathieu, V.,(...) and **Haiat, G.**, "Influence of healing time on the ultrasonic response of the bone-implant interface", *Ultrasound Med Biol,* **38(4)** (2012) pp 611-618. Mathieu, V.**,** (…) and **Haiat, G.**, "Mode III cleavage of a coin-shaped titanium implant in bone: effect of friction and crack propagation", *J Mech Behav Biomed Mater* **8** (2012) pp 194-203. *These papers shows that the coin-shaped implant allows to determine the Young's modulus and ultrasonic velocity of newly formed bone tissue as well as the ultrasound response and the effective adhesion energy of the bone-implant interface.*
- Vayron, R. (...) **Haiat, G.**, "Ultrasonic evaluation of dental implant osseointegration", *J Biomech* **47** (2014) pp. 3562-3568. *The stability of an implant can be retrieved with ultrasound.*
- Michel, A., (...) **Haiat, G.**, "In vitro evaluation of the acetabular cup primary stability by impact analysis" *J Biomech Eng* **137(3)** (2015) pp. 031011. An impact hammer to estimate the implant stability.

Multiscale homogenization methods in bone biomechanics

- Sansalone, V., (…), **Haiat, G.** "Determination of the heterogeneous anisotropic elastic properties of human femoral bone: from nanoscopic to organ scale", *J Biomech.* **43(10)** (2010) pp 1857-63. Cited 38 times. *This paper describes an homogenization method for the estimation of the bone elastic coefficients using the Eshelby's inclusion problem at various scales, from 100 nm up to the organ scale.*
- **Haiat, G.**, *et al.*, "Velocity dispersion in trabecular bone: influence of multiple scattering and of absorption", *J Acoust Soc Am.* **124(6)** (2008) pp 4047-58. Cited 34 times. *Trabecular bone is modelled as a composite material, allowing the prediction of negative (but also positive) values of velocity dispersion.*
- Desceliers (…) **Haiat, G.** "Probabilistic model of human cortical bone with mechanical alterations in ultrasonic range", *MechSyst Signal Pr,* **32** (2012) pp 170-177. *A stochastic method to model bone.*

Contact mechanics

- Barthel E. and **Haiat G.**, "Approximate model for the adhesive contact of viscoelastic sphere", *Langmuir.***18 (24)** (2002), pp. 9362-9370. Cited 25 times. **Haiat G**., Phan Huy M. C. and Barthel E., "The adhesive contact of viscoelastic spheres", *J. Mech. Phys. Sol.* **51 (1)** (2003), pp. 69-99. Cited 39 times. *These two seminal papers describe a model of a spherical indenter penetrating a viscoelastic material in presence of arbitrary adhesion potential and coupling contact mechanics with the physics of adhesion.*
- **Haiat G.**, Barthel E. "An approximate model for the adhesive contact of rough viscoelastic surfaces", *Langmuir*. **23(23)** (2007) pp 11643-50. Cited 10 times. *A model is developed to understand the mechanical behaviour of rough viscoelastic surfaces with adhesion phenomena, which can be used in BoneImplant.*

Patents pending (total: 6)

- **Haïat, G.**, Anagnostou, F., Mathieu, V. and Soffer, J.E. «Method and apparatus for ultrasonic testing of the mechanical strength of a part inserted into a body, in particular a dental implant ». File #0958325 submitted on 11/24/2009. PCT application 11/24/2010. Currently under national phases.
- **Haïat, G.**, Mathieu, V. and Michel, A. « Apparatus and method to support the insertion of an orthopedic instrument ». Application #1259308 submitted on 10/02/2012.
- **Haïat, G.**, Guipiéri, S. « Apparatus and method to assess vertebrae bone quality per operatively ». Application #1450703 submitted on 01/29/2014.

PhD and Habilitation thesis Committee Member

2015 Michel Darmon. Habilitation thesis. Rapporteur.

2013 Matthieu Hollette. Modeling the ultrasonic propagation of elastic waves in a composite medium with a 3D microstructure. Rapporteur.

2012 Alex Fidhaoussen. Development of a model-based inversion for the characterization of defects detected with ultrasound. Rapporteur.

2008 Alexandre Cohen-Tenoudji. Evaluation of the bone-implant interface: reliability and improvement brought by biomechanical approaches.

Editorial boards

2013 - Associate Editor of "Journal of Acoustical Society of America", the reference in Acoustics

2012 - Associate Editor of "Journal of Mechanics in Medicine and Biology"

2012 - Associate Editor of "Medical Engineering and Physics" (IF = 2.3)

2010 - Member of the advisory editorial board of "Ultrasound in Medicine and Biology" (IF = 2.5)

Professional Society Service

2015 Organizer of the special session "Wave Propagation in heterogeneous media" in the Fall 2015 meeting of the Acoustical Society of America meeting, Jacksonville, FL, USA. 24 papers were presented.

2014 Member of the selection committee for an assistant professor position (Université du Maine).

2014 Member of the selection committee for a researcher position (INRA).

2014 Member of the scientific committee of the 12th Congress of the French Acoustical Society, Poitiers.

2012 Member of the scientific committee of Acoustic'2012, Nantes.

2012 Organizer of the mini-symposium "Continuum-based Multiscale Modeling and Simulation with Uncertainties" in the JSME-CMD International Computational Mechanics Symposium 2012 (ICMS2012), Kobe, Japan.

2011 Organizer of the mini-symposium "Biomechanics of osteoarticular system" in the 2011 world congress on advances in structural engineering and Mechanics (ASEM'11), Seoul, Korea.

2011 Organizer of the workshop 1st Signal and Images in Medical Acoustics (organized by the French Acoustical Society)

2010-	Member of the technical council Biomedical Ultrasound of the Acoustical Society of America.
2010	Organizer of the special session of 10th Congress of the French Acoustical Society "Simulation of acoustic propagation in heterogeneous media".
2010	Organizer of the special session of 10th Congress of the French Acoustical Society "Ultrasound and bone".
2009-2015	Board Member of the French Acoustical society, Head of the Instrumentation and Signal group of the French Acoustical Society
2009	Organizer of the special session of the Acoustical Society of America meeting in San Antonio "Multiple scattering: from theory to applications".
2009	Member of the scientific committee of the 10th Congress of the French Acoustical Society, Lyon
2008	Chairman of a session in the 2nd european symposium on ultrasonic characterization of bone.

Scientific dissemination

2005	Participation in the event « science party»
2011	Participation in the redaction of the TV show « E=M6 » on biomechanics as scientific consultant. Interview on bone biomechanics. Audience ~3M persons.

Publication list of Guillaume Haïat

Publications dans des revues à comité de lecture

1. Barthel E. and **Haïat G.**, "Approximate model for the adhesive contact of viscoelastic sphere", *Langmuir*. **18 (24)** (2002), pp. 9362-9370.
2. **Haïat G**., Phan Huy M. C. and Barthel E., "The adhesive contact of viscoelastic spheres", *J. Mech. Phys. Sol.* **51 (1)** (2003), pp. 69-99.
3. Barthel E. and **Haïat G.** "Adhesive contact of viscoelastic spheres: A Hand-Waving Introduction", *J. adhes.* **80(1-2)** (2004), pp. 1-19.
4. **Haïat G.**, Padilla F., Barkmann R., Kolta S., Latremouille C., Glüer C.-C. and Laugier P., "In vitro speed of sound measurement at intact human femur specimens", *Ultrasound med. biol.* **31 (7)** (2005), pp. 987–996.
5. **Haïat G.**, Calmon P., Lhémery A. and Lasserre F., "A model-based inverse method for positioning scatterers in a cladded component inspected by ultrasonic waves", *Ultrasonics,* **43 (8)** (2005), pp. 619-628.
6. **Haïat G.**, Calmon P. and Lasserre F., "A method for the positioning of cracks detected by ultrasound through an austenitic cladding", *Mater. Eval.,* **63(11)** (2005)**,** pp 1115-1121.
7. **Haïat G.**, Padilla F., Barkmann R., Denks S., Moser U., Glüer C.-C. and Laugier P., "Optimal prediction of bone mineral density with ultrasonic measurements in excised femur", *Calcif. Tissue. Int.,* **77(3)** (2005), pp 186-192.
8. **Haïat G.**, Padilla F., Cleveland R. and Laugier P., "Effects of frequency dependent attenuation and dispersion on different speed of sound measurements on human intact femur", *IEEE Trans. Ultrason. Ferroelectr. Freq. Control.,* **53 (1)** (2006), pp 39-51.
9. **Haïat G.**, Padilla F., Barkmann R., Glüer C.-C. and Laugier P., "Numerical simulation of the dependence of quantitative ultrasonic parameters on trabecular bone microarchitecture and elastic constants", *Ultrasonics.,* **44(S1)** (2006), pp e289-e294.
10. Padilla F., Bossy E., **Haïat G.**, Jenson F., Laugier P., "Numerical simulation of wave propagation in cancellous bone: transmission and backscattering", *Ultrasonics.,* **44(S1)** (2006), pp e239-e243.
11. Barkmann R., Laugier P., Moser U., Dencks S., Padilla F., **Haiat G**., Heller M., Glüer C.-C. "A method for the estimation of femoral bone density from quantitative ultrasound variables measured directly at the human femur", *Bone.,* **40(1)** (2007), pp 37-44.
12. **Haïat G.**, Padilla F., Peyrin F., Laugier P., "Variation of Ultrasonic Parameters With Microstructure and Material Properties of Trabecular Bone: A 3D Model Simulation.", *J Bone Miner Res.* **22(5)** (2007), pp 665-74.
13. Dencks S., Barkmann R., Laugier P., **Haïat G.**, Padilla F., Glüer C.-C., "Wavelet-based signal processing of ultrasonic measurements at the proximal femur", *Ultrasound med. biol.* **33(6)** (2007), pp 970-80.
14. Laugier P., **Haïat G.**, and Padilla F., and, "Computer simulations of ultrasonic propagation in trabecular bone", *Comput Biol Med.* **37** (2007), pp 1827-1828
15. Sasso M., **Haiat G**., Yamato Y., Naili S., Matsukawa M., "Frequency dependence of ultrasonic attenuation in bovine cortical bone: an in vitro study", *Ultrasound Med. Biol.* **33(12)** (2007), pp 1933-42.
16. **Haïat G.**, Barthel E. "An approximate model for the adhesive contact of rough viscoelastic surfaces", *Langmuir*. **23(23)** (2007) pp 11643-50.
17. Sasso M., **Haiat G**., Yamato Y., Naili S., Matsukawa M., "Dependence of ultrasonic attenuation to bone mass and microstructure in bovine cortical bone", *J. Biomech.* **41(2)** (2008) pp 347-55.

18. Barkmann R., Laugier P., Moser U., Dencks S., Klausner M., Padilla F., **Haiat G.**, Glüer C.-C., "A Device for In vivo Measurements of Quantitative Ultrasound Variables at the human Proximal Femur", *IEEE Trans. Ultrason. Ferroelectr. Freq. Control.* **55(6)** (2008) pp 1197-1204.
19. **Haïat G.**, Padilla F., Laugier P., "Fast wave propagation in trabecular bone: numerical study of the influence of porosity and structural anisotropy", *J Acoust. Soc. Am.* **123(3)** (2008) pp 1694-705.
20. Sasso M., **Haiat G**., Talmant M., Laugier P., Naili S., "Singular Value Decomposition-based algorithm for the axial transmission technique: application to cortical bone characterization", *IEEE Trans. Ultrason. Ferroelectr. Freq. Control.* **55(6)** (2008) pp 1328-1332.
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Brevet

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- **Haïat, G.**, Guipiéri, S. «Dispositif et procédé de contrôle ultrasonore de la qualité osseuse». Demande n° 1450703 déposée à l'INPI le 29/01/2014.
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- **Haïat, G.**, Rosi, G., Tijou, A. «DISPOSITIF D'INSERTION D'UN IMPLANT CHIRURGICAL». Demande n° 1759130 déposée à l'INPI le 29/09/2017.
- **Haïat, G.**, Rosi, G., Tijou, A. «DISPOSITIF D'INSERTION D'UN IMPLANT CHIRURGICAL». Demande n° 1759136 déposée à l'INPI le 29/09/2017.
- **Haïat, G.**, Vayron, R. «Dispositif et procédé de contrôle de la stabilité d'un implant dentaire». Demande n° 1853306 déposée à l'INPI le 16/04/18. Licence transférée à la start-up WaveImplant en 2020.
- **Haïat, G.**, Hubert, A. «Dispositif pour évaluer la solidité d'un matériau». Demande n° 1856960 déposée à l'INPI le 26/07/18.
- **Haïat, G.**, Rosi, G., Poudrel, AS «Dispositif pour évaluer les propriétés mécaniques d'un tissu mou».

Livres et ouvrages

- Co-éditeur du livre *Bone Quantitative Ultrasound*, Springer, 1st Edition., 2011, XII, 468 p., Hardcover, SPRINGER. ISBN: 978-94-007-0016-1
- Auteur du Livre : *Imagerie ultrasonore : du contrôle non destructif à la biomécanique,* Presses Académiques Francophones, 125 p, Hardcover. 2012. ISBN 978-3-8381-7511-9

Chapitres dans des ouvrages

1. Laugier, P. and **Haïat G.** "Introduction to the physics of ultrasound", in *Bone Quantitative Ultrasound*. Springer. Chapter 2. 2011
2. **Haïat G.** "Linear ultrasonic properties of cortical bone: *in vitro* studies", in *Bone Quantitative Ultrasound*. Springer. Chapter 14. 2011
3. Hériveaux, Y, Nguyen, VH, Vayron, R and **Haiat, G** "Ultrasonic evaluation of dental implant stability" in *Dental Ultrasound in periodontology and Implantology*. Ed. Albert Chan and Oliver Kripfgans, Springer. 2020.
4. Martin, M, Pivnoka, P, **Haiat, G,** Lemaire, T, Sansalone, V "Algorithmic formulation of bone fabric evolution based on the dissipation principle: a 2D finite-element study" in *Developments and Novel Approaches in Biomechanics and Metamaterials.* Springer. 2020
5. Hériveaux, Y, Nguyen, VH and **Haiat, G** "Ultrasonic evaluation of the bone-implant interface" in *Bone QUS: new Horizons*. Eds. Pascal Laugier and Quentin Grimal, Springer. 2022.

Keynote lecture

- Vayron R., **Haiat G.**, "Ultrasound assessment of dental implant stability: finite element analysis of wave propagation" 6th International Conference on the Development of Biomedical Engineering in Vietnam, June 27-29 June 2016, Ho Chi Minh, Vietnam.
- **Haiat G.**, "Acoustical behavior of the bone-implant interface: from multiscale modeling to the patient's bed". 26th International Congress on Sound and Vibration (ICSV26) Montreal, Canada, 7-11 Juillet 2019.
- **Haiat G.**, "The bone-implant interface: multiscale modeling and applications". The International Conference on Modern Mechanics and Applications (ICOMMA 2020) Saigon, Vietnam, 2-4 Décembre 2020.

Conférences invitées

1. Laugier P., **Haiat G.**, Bossy E, Padilla F., "Finite-difference computations of ultrasound wave propagation in bone", *Third European Conference on Computational Mechanics Solids, Structures and Coupled Problems in Engineering*, actes du congrès, C.A. Mota Soares et.al. (eds.), Lisbon, Portugal, 5-8 June 2006.
2. **Haiat G.**, " Influence d'un gradient de propriétés matérielles sur la propagation d'ondes ultrasonores dans l'os cortical: application à la transmission axiale", *Workshop « Matériaux poreux, propagation d'ondes acoustiques et caractérisation »*, Valencienne, 26 février 2009.
3. **Haiat G.**, "Using acoustical modeling and numerical simulation for bone quantitative ultrasound", *2011 World Congress on Advances in Structural Engineering and Mechanics (ASEM'11^{plus})*, Seoul, Korea, 18–23 Septembre 2011.
4. Mathieu V., **Haiat G.**, "Développement d'une méthode ultrasonore pour l'estimation de l'ostéointégration d'implants dentaires", *Journées "acoustique des milieux poreux"*, Valencienne, 06-07 Juin 2011.
5. **Haiat G.**, " Estimation des propriétés biomécaniques de l'os: une approche multimodalité", *Journée scientifique de la Fédération Galileo Galilei Grenoble FR3345, "La mécanique aux interfaces avec la biologie et la santé". Vendredi 18 Novembre 2011*, Grenoble, 18 Novembre 2011.
6. **Haiat G.**, " Dispositif ultrasonore pour l'estimation de la stabilité d'un implant dentaire", *25ème déjeuner de la technologie : « Durabilité et fonctionnalisation des biomatériaux », 21/02/2012*.
7. Vayron R., **Haiat G.**, "In vitro ultrasonic assessment of the biomechanical quality of the interface surrounding a dental implant" 5th International conference on biomedical engineering in Vietnam, June 16-18 2014, Ho Chi Minh.
8. **Haiat G.**, "Multimodal determination of the biomechanical properties of the bone-implant interface" 17th U.S. National Congress on Theoretical & Applied Mechanics, June 15-20 2014, Lansing, MI, USA.
9. **Haiat G.,** "Developing healthcare technology through biomedical engineering approaches: from bench to bed", Journées Franco-Argentines, 50 ans pour la cooperation scientifique pour l'innovation, 5-6 Novembre 2014, Buenos Aires, Argentine.
10. Vayron, R., **Haïat G.,** "Assesment of the biomechanical properties of the interface surrounding a dental implant: an in vitro approach", Conferencia Latino Americano en Ingeniria Biomedica, 29/10-31/10/14, Parana, Argentina
11. Vayron, R. and **Haïat G.,** "Multimodal determination of the biomechanical properties of the bone-implant interface", Rencontres Franciliennes de Mécanique (RFM), 11-15 Mai 2015
12. **Haiat G.**, "Imagerie quantitative ultrasonore: application au rachis". Journée Scientifique du iLAB-Spine. June 4 2016. Montreal, QC.
13. Nguyen VH., Vayron R and **Haiat G.**, "Acoustical estimation of endosseous implant stability: finite element modeling and experimental validation", 5th Joint Meeting of the Acoustical Society of America and Acoustical Society of Japan, November 28- December 2 2016, Honolulu, Hawaii.

14. **Haiat G.**, "Characterization of the bone-implant interface". French-Italy Workshop Bone biomechanics: multiscale and multiphysical aspects, Guliano di Roma, Italy, 26-28 September 2017
15. **Haiat G.**, "Multiscale characterization of the biomechanical properties of the bone-implant". European Calcified Tissue Society ERC Grant webinar series, Dresden, Allemagne, 29 Novembre 2017
16. Nguyen VH., Vayron R and **Haiat G.**, "Acoustical estimation of endosseous implant stability: finite element modeling and experimental validation", 5th Joint Meeting of the Acoustical Society of America and Acoustical Society of Japan, November 28- December 2 2016, Honolulu, Hawaii.
17. Sansalone V., Martin M., **Haiat G**, Pivonka P, Lemaire T. Bone remodeling recast in the generalized continuum mechanics. Euromech Colloquium 594 Bone remodeling: multiscale mechanical models and multiphysical aspects, 15-19 May 2018, Nancy, France
18. **Haiat G** and Bosc, R. Biomechanical behavior of the bone-implant interface: from multiscale modeling to the patient's bed. 45ème congrès de la société de Biomécanique. 26-28 octobre 2020, Metz, France. Perspective Talk.
19. Nguyen, VH, Heriveaux, Y. and **Haiat G.**, "Characterization of bone-implant interfaces: some computational aspects" 6th International Conference on the Development of Biomedical Engineering in Vietnam, December 27-29 June 2022, Ho Chi Minh, Vietnam.

Actes de congrès nationaux et internationaux

1. **Haïat G.** and Barthel E., "The adhesive contact of viscoelastic spheres", *Adhesion Society Meeting*, Actes du congrès, 25-28 février 2001, Williamsbourg, Virginia, USA.
2. Barthel E. and **Haïat G.**, "Adhérence d'aspérités viscoélastiques: un modèle minimal", *Matériau 2002*, Actes du congrès, Tours.
3. Barthel E. and **Haïat G.**, "Adhesive contact of viscoelastic spheres : a hand-waving approach", *Adhesion Society Meeting*, Actes du congrès, pp. 25-28 Février 2003, Myrtle Beach, South Carolina, USA.
4. **Haïat G.**, Calmon P. and Lasserre F., "Application of ultrasonic modeling to the positioning of defects in a cladded component", *Review of Progress in Quantitative NDE*, eds. by D. O. Thompson and D. E. Chimenti, Actes du congrès, **23**, pp. 103-109, 27 Juillet-1er août 2003, Green Bay, Wisconsin, USA, Présentation Orale.
5. **Haïat G.**, Calmon P. and Lasserre F., "Simulation helped positioning of defects in a cladded component", *5th World Congress on Ultrasonics*, Actes du congrès, pp 105-108, 7-10 Septembre 2003, Paris. Présentation Orale.
6. Padilla F., Bossy E., **Haïat G.**, Jenson F., Laugier P., "Numerical simulation of transmission and backscattering in cancellous bone.", *2005 IEEE International Ultrasonics Symposium*, 18-21 Septembre 2005, Rotherdam.
7. **Haïat G.**, Padilla F., and Laugier P., "Simulation numérique de la dépendance des paramètres ultrasonores à des variations de microarchitecture et de constantes élastiques", *8ème congrès Français d'acoustique,* 24-27 avril 2006, Tours.

8. Sasso M., Talmant M., **Haïat G.,** Laugier P., Naïli S., "Development of a multi-dimensional SVD based technique for multi-receivers ultrasound used in the bone status characterization", *Fourth IEEE Workshop on Sensor Array and Multi-channel Processing*, 12-14 juillet 2006, Waltham, USA.
9. Dencks S., Barkmann R., Padilla F., **Haïat G.**, Laugier P., Schmitz G., Glüer C. C., "Optimization algorithm for improved quantitative ultrasound signal processing at the proximal femur", *2006 IEEE International Ultrasonics Symposium*, 3-6 Octobre 2006, Vancouver, Canada.
10. Desceliers C., Grimal Q., **Haiat G.**, Naili S., Soize C., "1D-space finite element approximation with 2D-space Fourier transform and with time-domain formulation for 3D-transient elastic waves in multilayer semi-infinite media", *13th International congress on Sound and vibration*, 2-6 juillet 2006, Vienne.
11. **Haïat G.**, Barthel E., "Adhesive contact to rough viscoelastic surfaces", *30th Annual Meeting of The Adhesion Society*, 18-21 Février 2007, Tampa, FL, USA. Actes du congrès.
12. Sasso M., **Haïat G.**, Talmant M., Laugier P., Nailï S., "Multi-modal analysis in axial transmission: application of a SVD-based extraction algorithm to ultrasonic cortical bone characterization", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche. Actes du congrès.
13. Sasso M., **Haïat G.,** Yamato Y., Naili S., Matsukawa M., "Broadband ultrasonic attenuation in bovine cortical bone: dependence on bone mass and microstructure", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche. Actes du congrès.
14. **Haiat G.**, Padilla F. and Laugier P., "3D simulations of wave propagation in a poroelastic medium: prediction of slow and fast wave mode in human trabecular bone", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche. Actes du congrès.
15. **Haiat G.**, Lonne S., Lhémery A., Padilla F., Laugier P. and Naili S., "Modeling the frequency dependence of phase velocity in phantoms of trabecular bone", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche.
16. Grimal Q., Talmant M., **Haïat G.**, Naili S., Desceliers C. and Soize C. "Stochastic modeling of the interaction of acoustic waves with a solid plate of random thickness: Application to cortical bone assessment with the axial transmission technique", *2007 International Congress on Ultrasonics*, 9-12 Avril 2007, Vienne, Autriche.
17. Grimal Q., Talmant M., **Haiat G.**, Naili S., Desceliers C., Soize C., "Modeling with uncertain parameters : Application to the ultrasonic assessment of bone quality", *21st Congress of the international society of biomechanics*, 1-5 juillet 2007, Taipei. Actes du congrès.
18. Sasso M., **Haïat G.,** Yamato Y., Naili S., Matsukawa M., "Broadband Ultrasonic Attenuation in femoral bovine cortical bone is an indicator of bone properties", *2007 IEEE International Ultrasonics Symposium*, 28-31 Octobre 2007, New York, USA. Actes du congrès.
19. **Haïat G.**, Padilla F., Laugier P., "Dependence of both slow and fast wave mode properties on bone volume fraction and structural anisotropy in human trabecular bone: a 3D simulation study", *2007 IEEE International Ultrasonics Symposium*, 28-31 Octobre 2007, New York, USA.
20. **Haïat, G.**, Sasso, M., Naili, S., Matsukawa M., "Frequency dependence of ultrasonic properties of bovine cortical bone samples", *29th Symposium on UltraSonic Electronics (USE2008)*, 11-13 November 2008, Sendai, Japon.
21. **Haïat, G.**, Lhémery, A., Padilla, F., Laugier, P. and Naili, S., "Influence of multiple scattering and of absorption on velocity dispersion in trabecular bone", *29th Symposium on UltraSonic Electronics (USE2008)*, 11-13 November 2008, Sendai, Japon.
22. **Haïat G.**, Padilla F., Svrcekova M., Chevalier Y., Pahr D., Laugier P. and Zysset P., "Relationship between the apparent Young's modulus and the ultrasonic parameters in human trabecular bone", *Congrès Français de Mécanique*, Marseille, Aout 2009, actes du congrès.

23. Naili, S., Vu M., Grimal Q., Talmant M., Desceliers C., Soize, C., **Haïat, G.** " Finite element model of the ultrasonic propagation in cortical bone: application to the axial transmission device ", *Congrès Français de Mécanique,* Marseille, Aout 2009, actes du congrès.
24. **Haïat G.**, Naili S., Vu M.-B., Grimal Q., Talmant M., Desceliers C., Soize C. "Time-domain model of the ultrasonic wave propagation in an inhomogeneous anisotropic viscoelastic fluid/solid multilayer medium: application to cortical bone" *2009 IEEE International Ultrasonics Symposium,* 19-23 September 2009, Rome, Italy, actes du congrés.
25. Sansalone V., Naili, S., Bousson V., Bergot, C., Peyrin, F., Laredo, J.D. and **Haïat G.** "Computing the heterogeneous anisotropic elastic properties of cortical bone by a micromechanical approach" *IV European conference on Computational mechanics,* Paris, 16-21 May 2010. Actes du congrés.
26. Fukui K., Mathieu V., Matsukawa M., Kawabe M, Vayron R, Soffer JE, Anagnostou F, and **Haiat G**., "Micro-Brillouin scattering measurements in mature and newly formed bone tissue surrounding an implant", *31th Symposium on UltraSonic Electronics (USE2010)*, 6-8 decembre 2010, Tokyo, Japon.
27. Mathieu, V.**,** Anagnostou, F., Soffer, J.E., and **Haïat, G.**, "An ultrasonic device to assess the biomechanical properties of the bone implant interface", *2010 IEEE International Ultrasonics Symposium*, 11-14 Octobre 2010, San Diego. Actes du congrés.
28. Mathieu V., Fukui K., Matsukawa M., Kawabe M, Soffer JE, Anagnostou F, and **Haiat G**., "Assessment of the biomechanical properties of newly formed bone tissue using Micro-Brillouin scattering", *2010 IEEE International Ultrasonics Symposium*, 11-14 Octobre 2010, San Diego. Actes du congrés.
29. Sansalone V., Naili S., Bousson V., Bergot C., Peyrin F., Zarka J., Laredo J.D., **Haïat G.** "Coupling a homogenization model with an imaging technique to retrieve cortical bone anisotropic biomechanical properties" The 2011 World Congress on Advances in Structural Engineering and Mechanics (ASEM11^{plus}), Seoul, 18-22 September 2011. Actes du congrés.
30. Nguyen V.-H., Naili S., **Haiat G**. "Numerical studies of ultrasonic wave propagation in anisotropic poroelastic bones" The 2011 World Congress on Advances in Structural Engineering and Mechanics (ASEM11^{plus}), Seoul, 18-22 September 2011. Actes du congrés.
31. Sansalone V., Naili S., Bousson V., Bergot C., Peyrin F., Zarka J., Laredo J.D., **Haïat G.** "Role of porosity and tissue mineral density in determining the elastic properties of cortical bone tissue in the human femoral neck" ECCOMAS 2012 Congress, Vienna, Austria, September 10-14, 2012. Actes du congrés.
32. Sansalone V., Bousson V., Naili S., Bergot C., Peyrin F., Laredo J.D., **Haïat G.** "A three step homogenization model based on the Eshelby formulation to model the multiscale cortical bone structure" International Computational Mechanics Symposium 2012, Kobe, Japon, Octobre 9-11, 2012. Actes du congrés.
33. Desceliers C., Soize, C., Naili, S., **Haïat, G.** "Experimental identification of a prior tensor-valued random field for the elasticity properties of cortical bones using in vivo ultrasonic measurements", *Congrès Français d'Acoustique,* Nantes, Avril 2012, actes du congrès.
34. Vayron, R., Loriot, D., **Haïat, G.** "Ultrasonic assessment of the in vitro biomechanical stability of a dental implant", *21st International Congress on Acoustics, 165th meeting of the acoustical society of America,* Monteral, Juin 2013, actes du congrès.
35. Vayron, R., Loriot, D., **Haïat, G.** "Estimation of dental implant stability using an ultrasonic technique", *2013 International Congress on Ultrasound,* Singapour, Mai 2013, actes du congrès.
36. Mathieu, V., Chappard, C., **Haïat, G.** "Anatomical dependence of the ultrasonic velocity in human cortical bone samples", *2013 International Congress on Ultrasound,* Singapour, Mai 2013, actes du congrès.

37. Vayron R., Mathieu, V. and **Haïat G.**, "Assessing in vitro dental implant stability with a quantitative ultrasound method", colloque biennal Recherche en Imagerie et Technologies pour la Santé (RITS 2013), 8-11 Avril 2013, Bordeaux, France.
38. Vayron R., Mathieu, V. and **Haïat G.**, "Variation de la réponse ultrasonore d'un implant dentaire inclus dans un biomatériau et soumis à un chargement en fatigue", 12ème Congrès Français d'acoustique, Poitiers, 22-25 avril 2014
39. Vayron R., Matsukawa, M.., Tsubota, R., Barthel E. and **Haïat G.**, "Suivi des propriétés biomécaniques de l'os néoformé au voisinage d'un implant en titane par diffusion micro Brillouin", 12ème Congrès Français d'acoustique, Poitiers, 22-25 avril 2014
40. Vayron R. and **Haïat G.**, " *In vitro* ultrasonic assessment of the biomechanical quality of the interface surrounding a dental implant", 5th International Conference on the Development of Biomedical Engineering, Ho Chi Minh City, Vietnam, June 16-18, 2014
41. Taki, H., **Haïat G.,** Yamakawa, M., Shiina T and Sato T. "Small calcification depiction in ultrasonography using frequency domain interferometry", IEEE Ultrasonics Symposium 2014, Chicago, USA, 3-6 septembre 2014
42. Nagatani, Y., Taki, H., **Haïat G.,** Matsukawa, M. "Numerical Investigation of the Effect of Incoherence on Fast Wave Generation in Cancellous Bone", the 35th Symposium on Ultrasonic Electronics (USE2014), Tokyo, Japan, 3-5 décembre 2014
43. Vayron R. and **Haïat G.**, "Dental implant stability assessment using quantitative ultrasound", Surgetica 2014, Chambéry, 3-5 Décembre 2014
44. **Haïat G.**, "Characterization of the biomechanical properties of the bone-implant interface under extreme conditions", 2015 ELyT Lab Workshop, Matsushima, 18-21 Septembre 2015
45. Sansalone V., Bousson V., Bergot C., Peyrin F., Laredo J.D., **Haïat G.** and Naili S. "Bone Elasticity: 3D Synchrotron imaging, multiscale modelling and uncertainties" 4th International Conference on Computational and Mathematical Biomedical Engineering, CMBE2015, Cachan, 29/06-01/07/2015. Actes du congrés.
46. Michel, A.. Bosc, R. and **Haiat G.**, "Estimation of the acetabular cup implant stability via impact analysis", 22nd International Congress on Sound and Vibration, 12-16 July 2015. Florence, Italie.
47. Nagatani, Y., Nguyen, VH., Naili S. and **Haiat G.**, " The Effect of Viscoelastic Absorpion on the Fast and Slow Wave Modes in Cancellous Bone", 6th European Symposium on Ultrasonic Characterization of Bone, 10-12 Juin 2015, Corfu, Greece.
48. Taki, H., **Haiat G.**, Kanai, H. " Small calcification depiction in ultrasonography based on adaptive beamforming technique with coherent signal integration ", 2015 IEEE International Ultrasonics Symposium, 21-24 Octobre 2015, Taipei, Taiwan.
49. Sansalone V., Gagliardi D., Desceliers C., **Haïat G.** and Naili S. "On the uncertainty propagation in multiscale modeling of cortical bone elasticity" 40ème Congrès de la Société de Biomécanique, Paris, 28-30/10/2015. Actes du congrés.
50. Raffa M.L., Nguyen, V.H. and **Haïat G.** "Finite element modelling of a cementless acetabular cup: influence of friction and of bone properties", 5th International Conference on Computational and Mathematical Biomedical Engineering - CMBE2017, 10-12 April 2017, Pittsburgh, PA, USA. Actes du congrès.
51. Vayron, R. ; Rouard, H., Flouzat-Lachaniette, CH and **Haiat G.**, "Caractérisation ultrasonore des propriétés biomécaniques de disques intervertébraux", Congrès Français de Mécanique (CFM 2017); Lille, 28 aout – 1er Septembre 2017. Actes du congrés.
52. Martin, M., Le Maire, T., **Haiat G.**, Pivonka, P. and Sansalone, V. "A thermodynamics framework to describe bone remodeling: a 2D study", Congrès Français de Mécanique (CFM 2017); Lille, 28 aout – 1er Septembre 2017.

53. Scala, I., Rosi, G., Nguyen, V.-H., Naili, S. Vayron, R., Haiat, G., Seuret, S., Jaffard, S. « Evaluation of dental implant stability using ultrasonic characterization and multifractal analysis ». Congrès Français de Mécanique (CFM 2017); Lille, 28 aout – 1er Septembre 2017.
54. Martin, M., Pivonka, P., **Haïat, G,** Sansalone, V., Lemaire, T. « Un modèle multi-échelles de remodelage osseux reliant les influences biochimiques et mécaniques », 24ème Congrés Français de Mécanique, Brest, 26-30 aout 2019.
55. Nguyen, VH., Raffa, ML and **Haïat, G** « Primary stability of cementless acetabular cup implants: a numerical study», 6th International Conference on Computational and Mathematical Biomedical Engineering- CMBE2019, 10-12 June 2019, Kobe, Japan
56. Heriveaux Y, Nguyen VH, **Haiat G**, "Numerical study on the reflection of an ultrasonic wave from a rough bone-implant interface" 26th International Congress on Sound and Vibration (ICSV26) Montreal, Canada, 7-11 Juillet 2019.
57. Vayron R, Nguyen VH, **Haiat G**, "Comparing quantitative ultrasound and resonance frequency analysis to evaluate dental implant stability" 44ème congrès de la société de Biomécanique, Poitiers, 28-30 Octobre 2019.
58. Immel, K., Duong, TX, Nguyen, VH, Sauer, R, and **Haïat, G "**A Frictional and Adhesive Contact Model for Debonding of the Bone-Implant Interface Based on State Variable Friction Laws", 8th GACM Colloquium on Computational Mechanics (GACM 2019), 28-30 Aout 2019, Kassel, Germany.
59. Yasui H, Yano K, Fraulob M, **Haïat, G**, Matsukawa M "Measurement of Longitudinal Wave Velocity in Newly Formed and Mature Bone in the GHz Range", The 40th Symposium on UltraSonic Electronics (USE2019), 25-27 Novembre 2019, Tokyo, Japan.
60. Lamassoure L, Rosi G, Giunta J, Bosc R, and, **Haïat G** "An impact hammer as a decision support system for surgeons during an osteotomy", XXV ICTAM, 23-28 August 2020, Milano, Italy
61. Lamassoure, L., Giunta J., Rosi G., Poudrel A.S., Bosc R., **Haiat G** Use of an Instrumented Hammer as a decision support system during Rhinoplasty: validation on an Animal Model. 45ème congrès de la société de Biomécanique. 26-28 octobre 2020, Metz, France.
62. Heriveaux, Y., Audoin, B, Biateau, C, Nguyen, VH, **Haïat, G** "Measurement of the propagation of a guided wave in a dental implant", Forum Acousticum, 20-24 Avril 2020, Lyon.
63. Albini Lomami, H, Damour, C, Rosi, G, Dubory, A, Flouzat-Lachaniette, CH, **Haiat, G** "Estimation of cementless femoral stem stability using an impact hammer", Forum Acousticum, 20-24 Avril 2020, Lyon.
64. Lamassoure L, Rosi G, Poudrel AS, Bosc R, **Haïat, G** "Validation of an impact hammer to assess the mechanical properties of a tissue during osteotomy", Forum Acousticum, 20-24 Avril 2020, Lyon.

Communications orales sans actes

1. **Haïat G.**, Phan Huy M.C. et Barthel E., "Le contact adhésif viscoélastique de sphères", Matériau 2002, Tours.
2. **Haïat G.**, Calmon P. et Lasserre F., "Repositionnement de défauts dans un composant revêtu de surface irrégulière", 8ème Journées d'Acoustique Physique Sous-marine et Ultrasonore, Cargèse, 26-28 mars 2003. Présentation Orale.
3. Lasserre F., Pasquier T., **Haïat G.**, Calmon P., Leberre S., Lutsen M., "Helped positioning by using a simulation tool for qualification of PWR vessel examination technique", 4th International Conference on NDE in relation to structural integrity for nuclear and pressurized components, 6-8 December 2004, London.
4. **Haïat G.**, Calmon P. and Lasserre F., "Model-based inversion for the characterization of crack-like defects detected by ultrasound in a cladded component", Anglo-French Physical Acoustics Conference 2005 (AFPAC - 05), 19-20 Janvier 2005, Le Havre. Présentation Orale.

5. Bossy E., Padilla F., Jenson F., **Haiat G.**, Laugier P., "Numerical simulation of wave propagation in cancellous bone" 148th Meeting of the Acoustical Society of America, 15-19 November 2004, San Diego, California.
6. Barkmann R., Laugier P., Moser U., Dencks S., **Haiat G.**, Heller M. and Glüer C.-C. "Estimation of bone density of the proximal femur using Quantitative Ultrasound – results at excised specimens" Osteologie 2005, 3-5 Mars 2005, Basel, Suisse.
7. Barkmann R., Laugier P., Moser U., Dencks S., **Haiat G.**, Padilla F. and Glüer C.-C. "Estimation of femoral bone density using site specific quantitative ultrasound – results on excised specimens" 2nd Joint Meeting of the International Bone and Mineral Society (IBMS) and the European Society for Calcified Tissue (ECTS), 25-29 Juin 2005, Genève, Suisse.
8. **Haïat G.**, Padilla F. and Laugier P., "Effects of frequency-dependent attenuation and dispersion on different speed of sound measurements on human intact femur", Anglo-French Physical Acoustics Conference 2005 (AFPAC - 05), 19-20 Janvier 2005, Le Havre. Présentation Orale.
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141. Bosc, R., Tijou, A., Rosi, Giuseppe, Hernigou, P., Meningaud, JP, **Haïat, G** and Flouzat Lachaniette, CH "Evaluation de la stabilité primaire de l'implant acétabulaire par une méthode d'impact : étude cadavérique" 94ème congrès de la société Française chirurgie orthopédique et traumatologique. 6-9 Novembre 2017.
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153. Fraulob, M., Pang, S., Le Cann, S., Vayron, R., Laurent-Brocq, M., Jasiuk, I., **Haïat, G**. "Biomechanical characterization of the bone-implant interface with nanoindentation and Raman

spectroscopy", 25th Congress of the European Society of Biomechanics, Vienne, Autriche, 7-10 juillet 2019.
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24-26 June, 2019 Fréjus.
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159. Heriveaux, Y., Nguyen, VH, **Haïat, G** "Influence of compressive stresses on the ultrasonic response of the bone-implant interface", 176th meeting of the Acoustical Society of America, 2-6 Decembre 2019, San Diego, CA, USA.
160. Heriveaux, Y., Audoin, B, Biateau, C, Nguyen, VH, **Haïat, G** "Ultrasonic guided wave propagation in a dental implant", 176th meeting of the Acoustical Society of America, 2-6 Decembre 2019, San Diego, CA, USA.
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162. Heriveaux, Y., Nguyen, VH, Biwa, S and **Haïat, G** "Interaction between an ultrasonic wave and a rough bone-implant interface: development of an analytical model", The 27th International congress of sound and vibration (ICSV27), Prague, République Tchèque.
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172. Guillaume, F, Le Cann, S, Tengattini, A, Törnquist, E, Falentin-Daudre, C, Albini Lomami, H, Petit, Y, Isaksson, H and Haiat G "Neutron tomography to investigate the bone-implant interface", the Canadian Society of Biomechanics Congress 2020. May 25-28th 2021.
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178. Zarate, JC, Messineo, G, Colabella, L, Cisilino, A, and **Haiat G** "Estimacion de la fraccion solida de hueso trabecular mediante el analisis inverso de ensayos de ultrasosonido", MECOM 2021 XXXVII Congreso Argentino de Mecánica Computacional. Resistencia, Argentina, November 3-5 2021.
179. Colabella L, **Haiat G**, Naili S, and Cisilino A, "Multiscale design of porous implants with a biomimetic cellular material", 15th World Congress on Computational Mechanics (WCCM-XV). Yokohama, Japan, July 31- August 5, 2021.
180. Immel, K., **Haïat, G,** Sauer, R, and Nguyen, VH, "Evaluation of primary stability of hip implants: a numerical study", 11th European solid mechanics conference, Galway, Ireland, 4-8 July 2022.
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185. Hériveaux, Y; Le Cann, S; Fraulob, M; Vennat, E; Nguyen, VH; **Haiat G** "Numerical simulation of stress-shielding at the bone-implant interface under shear loading", 27th Congress of the European Society of Biomechanics, June 26-29, 2022, Porto, Portugal
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