Scientific program

Monday afternoon

14h - 14h50 Keynote

Chairs: Quentin Grimal & Dean Ta

STRUCTURE-FUNCTION RELATIONSHIP OF TRABECULAR BONE CHARACTERIZED BY ULTRASOUND, L. Cardoso, (CUNY, New York – USA)

14h50 – 15h50 Backscattering & Porous media

Chairs: Quentin Grimal & Dean Ta

14h50 – 15h10 CORRELATIONS BETWEEN MICROSTRUCTURE AND APPARENT ULTRASONIC BACKSCATTER MEASUREMENTS OF HUMAN CANCELLOUS BONE, A. M. Viano, J. P. Ankerson, J. Huang, L. C. Fairbanks, S. C. Ebron, Brent K. Hoffmeister

15h10 – 15h30 EFFECT OF THE CORTEX ON BACKSCATTER DIFFERENCE MEASUREMENTS OF CANCELLOUS BONE, B. Hoffmeister, J. Moore, S. Ebron, E. Maind

15h30 – 15h50 EFFECT OF MICRO-STRUCTURE ON ATTENUATION, SCATTERING AND APPARENT ABSORPTION IN NUMERICAL STRUCTURES MIMICKING CORTICAL BONE, Y. Karbalaeisadegh, O. Yousefian, M. Muller

16h20 - 17h40 Wave Propagation models

Chairs: Simon Bernard & Kay Raum

16h20 – 16h40 NUMERICAL STUDY ON THE REFLECTION OF AN ULTRASONIC WAVE FROM A ROUGH BONE - IMPLANT INTERFACE, Y. Hériveaux , V.-H. Nguyen , G. Haïat

16h40 – 17h00 NUMERICAL SIMULATION OF ELASTIC WAVE PROPAGATION IN THE SKULL OF DOLPHINS, A. Hejazi Nooghabi, Q. Grimal, M. Reinwald, A. Herrel, L. Boschi

17h00 – 17h20 HOW CAN A NUMERICAL MODEL HELP THE UNDERSTANDING OF IN-VITRO ULTRASOUND STIMULATION OF BONE CELLS? M. Majnooni, P. Lasaygues, J-C Scimeca, D. Momier, C. Guivier-Curien, C. Baron

17h20 – 17h40 ESTIMATION OF PARAMETERS QUANTIFYING POROSITY IN RANDOM POROUS STRUCTURES USING ULTRASONIC ATTENUATION: SOLVING THE INVERSE PROBLEM, M. Muller, O. Yousefian, R. White, H.T. Bank

Tuesday morning

8h40 -10h40 Signal processing

Chairs: Luis Cardoso & Marie Muller

8h40 – 9h00 CHARACTERIZATION OF BONE DEMINERALIZATION BY ULTRASOUND USING CONVOLUTIONAL NEURAL NETWORKS, A. V. Alvarenga, Melissa Fabricio, Cristiane E. R. Silva, R. P. B. Costa-Félix

9h00 – 9h20 EXPERIMENTAL AND 3D-SIMULATIONS OF SHEAR WAVE IN CORTICAL BONE TUBES USING AXIAL TRANSMISSION TECHNIQUE, L. Bustamante, M. Saeki, T. Makinoa M. Matsukawa , Y. Nagatani

BEST STUDENT PRESENTATION AWARD

9h20 – 9h40 MICROSTRUCTURAL AND COMPOSITIONAL DETERMINANTS OF ELASTIC DAMPING ASSESSED FROM RESONANT ULTRASOUND SPECTROSCOPY MEASUREMENTS IN CORTICAL BONE, F. Fan , X. Cai , P. Laugier , Q. Grimal

9h40 – 10h00 IN VIVO PULSE-ECHO MEASUREMENT OF CORTICAL BONE THICKNESS AND BROADBAND ATTENUATION USING ORTHOGONAL MATCHING PURSUIT, C. Han, D. Cassereau, J.-G. Minonzio, P. Laugier and Q. Grimal

10h00 – 10h20 SEARCH FOR INVARIANT PARAMETERS FOR ASSESSING THE CONDITION OF THE COMPACT BONE UNDER SOFT TISSUES USING GUIDED WAVES, A. Tatarinov, V. Kurtenoks, A. Sysoevs, M. Kovalovs, O. Krutikova

10h20 – 10h40 APPLYING FEM-BASED RESONANT ULTRASOUND SPECTROSCOPY TO ELASTICITY MEASUREMENT OF HARD BIOMATERIAL SAMPLES OF IRREGULAR SHAPE, R. Wang, F. Fan, Q. Zhang, F. Shen, H. Niu, P. Laugier

10H40 – 12h20 Poster session

Chair: Pascal Laugier

P1 - STUDY OF THE BONE DEGRADATION RELATED TO THE POSTMORTEM DELAY BY ULTRASONIC MEASUREMENT, A. Angermuller, A. Arciniegas, M. Michiel, L. Martinez, S. Serfaty, J.-Y. Le Huérou , N. Wilkie-Chancellier

P2 - ESTABLISHMENT OF PARAMETERS INFLUENCING BIO-ACOUSTIC-LEVITATION, N. Beilfuß, R. Puts, U. Zabarylo, K. Raum

P3 - ELASTIC PROPERTIES MEASUREMENT OF HUMAN ENAMEL BASED ON RESONANT ULTRASOUND SPECTROSCOPY, F. Fan, R. Wang, Q. Zhang, F. Shen, P. Rena, H. Niu, P. Laugier

P4 - SHAPE RECOGNITION IN USCT OF CORTICAL BONE, F. Marwa, P. Chabrol, Y. Wajih Elhadj, P.Lasaygues

P5 - FUSION PROCESSING FOR ULTRASONIC BACKSCATTER PARAMETRIC IMAGE AND μ-CT IMAGE OF CANCELLOUS BONE, X. Li, Y. Li, K. Xu, F. Xu, J. Zhang, D. Ta

P6 - MACHINE LEARNING CLASSIFIER FOR OSTEOPOROSIS DIAGNOSIS USING ULTRASONIC BACKSCATTER SIGNALS, D. Bi, B. Li, Y. Li, K. Xu, C. Liu, D. Ta

P7 - EXPERIMENTAL OBSERVATIONS OF PIEZOELECTRIC SIGNALS GENERATED IN WATER-SATURATED CANCELLOUS BONE BY ULTRASOUND IRRADIATION, A.Hosokawa

P8 - MEASUREMENT OF ULTRASONIC ANISOTROPIC ATTENUATIONOF P-WAVE IN MILLIMETRIC-SIZED HUMAN CORTICAL BONE SAMPLES, Q. Grimal, M. Talmant, G. Renaud

P9 - MECHANICAL IMAGING OF HUMAN FEMORAL HEAD BY BRILLOUIN MICRO-SPECTROSCOPY, M. Alunni Cardinali, D. Fioretto, D. Dallari, M. Govoni, C. Stagni, F. Marmi, M. Tschon, N. Nicoli Aldini, P. Sassi, M. Paolantoni, N. Tombolesi and A. Morresi

P10 - ESTIMATION OF CORTICAL MICROMORPHOLOGY FROM HIGH - FREQUENCY ULTRASOUND BACKSCATTER, H. Nguyen Minh, J. Du, G. Iori, K. Raum

P11 - ULTRASONIC VELOCITIES REFLECTCORTICAL BONE TISSUE COMPRESSION STRENGTH, F. Fan , J. D. Maetzu Redin, P. Laugier, J. Schneider, G. Iori , K. Raum, Q. Grimal

Tuesday afternoon

13h40 – 15h20 Bone imaging

Chairs: Michal Pakula & Rui Zheng

13h40 – 14h00 RAY-THEORY BASED TRANSCRANIAL PHASE CORRECTION FOR ULTRASONIC IMAGING THROUGH THE SKULL: A PHANTOM STUDY, C. Jiang, Y. Li, B. Li, K. Xu, D. Ta

14h00 – 14h20 IN VIVO MEASUREMENT OF COMPRESSIONAL AND SHEAR WAVE – SPEED AND ITS ANISOTROPY IN CORTICAL BONE WITH INTRA – OSSEOUS ULTRASOUND IMAGING, P. Clouzet, J. L. Johnson Shepherd, D. Cassereau, G. Renaud

14h20 – 14h40 PHASE SHIFT MIGRATION METHOD BASED SYNTHETIC APERTURE ULTRASOUND IMAGING OF CORTICAL BONE: A PHANTOM STUDY, Y. Li, C. Jiang, K. Xu, L. H. Le, D. Ta

14h40 – 15h00 PREDICTION OF MICRO-ARCHITECTURAL PROPERTIES OF CORTICAL BONE USING ULTRASOUND ATTENUATION AND A DEEP NEURAL NETWORK, K. Mohanty, O. Yousefian, Y. Karbalaeisadegh, Mi. Ulrich, M. Muller

15H00 – 15h20 QUANTITATIVE ULTRASOUND IMAGING OF BONE BASED ON FULL WAVEFORM INVERSION S. Bernard, V. Monteiller, D. Komatitsch, R. Guillermin, P. Lasaygues

15h50 – 16h50 Clinical applications

Chairs: Daniel Rohrbach & Ann Viano

15h50 – 16h10 EFFECT OF DIABETES ON LONGITUDINAL WAVE VELOCITY IN RAT BONE IN THE GHZ RANGE, H. Yasui, Y. Harada, T. Fukunaga, Y. Kuzuhara, M. Ikegawa and M Matsukawa

16h10 – 16h30 BI-DIRECTIONAL AXIAL TRANSMISSION MEASUREMENTS IS AN EASY TO APPLY METHODOLOGY ALLOWING RISK ASSESS, J.-G. Minonzio, D. Ramiandrisoa, J. Schneider, E. Kohut, M. Streichhahn, U. Stervbo, R. Wirth, T. Westhoff, K. Raum, N. Babel

16h30 – 16h50 DECREASED SOUND VELOCITY IS A POTENTIAL NON-INVASIVE BIOMARKER OF BONE QUALITY IN CHILDREN AND ADOLESCENTS WITH HYPOPHOSPHATEMIC RICKETS, A. Raimann, J. Schneider, A. Boni-Mikats, R. Tuskova, P. Feil, S. Mehany, P. Pietschmann, M. Krssak, G. Haeusler, J. Patsch, K. Raum

Wednesday morning

8h40 – 9h30 Keynote

Chairs: Mami Matsukawa & Alexeï Tatarinov

ESTIMATION OF TRABECULAR BONE PROPERTIES USING TWO-PHASE MODEL,
M. Pakula (Kazimierz Wielki University in Bydgoszcz, Poland)

9h30 – 10h30 Bone imaging

Chairs: Mami Matsukawa & Alexeï Tatarinov

9h30 – 9h50 THE ASSESSMENT OF SCOLIOSIS CURVE PROGRESSION USING BONE QUALITY PARAMETER MEASURED FROM ULTRASOUND SPINE IMAGES – A PILOT STUDY, R. Zheng, E. Lou, L. H Le, D. Ta

9h50 – 10h10 THE POTENTIAL OF THE MACHINE LEARNING ON THE ACOUSTIC IMAGING OF THE PROPAGATION FIELD, Y. Nagatani

10h10 – 10h30 ESTIMATION OF CORTICAL THICKNESS AND SPEED OF SOUND USING REFRACTION AND PHASE ABERRATION CORRECTED PULSE-ECHO ULTRASOUND, H. Nguyen Minh, K. Raum

11h20 – 12h20 Clinical applications

Chairs: Cécile Baron & Brent Hoffmeister

11h20 – 11h40 BONE ASSESSMENT BASED ON PHOTOACOUSTIC TECHNIQUES, T. Feng, Y. Zhu, K. Kozloff, R. Morris, C. Liu, G. Zhao, Q. Jiang, Q. Cheng, and X. Wang

11h40 – 12h00 IN VIVO CORTICAL PARAMETERS MEASUREMENT AT THE RADIUS BY HR-PQCT AND BI-DIRECTIONAL AXIAL TRANSMISSION, D. Ramiandrisoa, S. Fernandez , C. Chappard, P. Laugier, M. Cohen-Solal, J.-G. Minonzio

12h00 – 12h20 SITE DEPENDENCE OF ULTRASONICALLY INDUCED ELECTRICAL POTENTIALS IN BONE, T. Nakamura , M. Takata , T. Oda , I. Michimoto and M. Matsukawa

12h20 – 12h40 TWO WAVE APPARATUS FOR IN VIVO RADIUS BONE EVALUATION IN THEIR TEENS, M. Matsukawa, I. Mano, Y. Yoneda, E. Ozaki