CMBBE2018

15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering

and

3rd Conference on Imaging and Visualization

Programme

Instituto Superior Técnico
Lisbon • Portugal

26-29 March, 2018

Edited by
Paulo R. Fernandes, João Manuel R. S. Tavares, João Folgado, Carlos Quental, Rui Ruben

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Title
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First edition, March 2018

IDMEC - Instituto de Engenharia Mecânica
Instituto Superior Técnico, Avenida Rovisco Pais 1, 1049-001 LISBOA

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Welcome Message

On behalf of the Organizing Committee, we are honored to welcome you to the **15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and the 3rd Conference on Imaging and Visualization** (CMBBE2018), hosted at Instituto Superior Técnico (IST), Technical University of Lisbon, Portugal, from 26th to 29th of March 2018.

In this edition, the two events will run together as a single conference, highlighting the strong connection with the Taylor & Francis journals: Computer Methods in Biomechanics and Biomedical Engineering (John Middleton and Christopher Jacobs, Eds.) and Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization (João Manuel R.S. Tavares, Ed.).

The conference has become a major international meeting on computational biomechanics, imaging and visualization. In this edition, the main program includes 212 presentations. In addition, sixteen renowned researchers will give plenary keynotes, addressing current challenges in computational biomechanics and biomedical imaging. In Lisbon, for the first time, a session dedicated to award the winner of the Best Paper in CMBBE Journal will take place.

We believe that CMBBE2018 will have a strong impact on the development of computational biomechanics and biomedical imaging and visualization, identifying emerging areas of research and promoting the collaboration and networking between participants. This impact is evidenced through the well-known research groups, commercial companies and scientific organizations, who continue to support and sponsor the CMBBE meeting series. In fact, the conference is enriched with five workshops on specific scientific topics and commercial software.

Besides the scientific program, the conference social program was defined to provide the participants with a pleasant stay in Lisbon, the capital of Portugal. Lisbon is a historic city facing the Atlantic Ocean that has been a point of cultural interchange and encounter for many centuries for visitors coming from all over the world. Lisbon is recognized as one of the most beautiful places to visit, and it is a safe and pleasant city where delegates and their companions will feel at ease and will be very well received.

To conclude, we wish you a very productive and pleasant conference as well as an enjoyable stay in Portugal,

Paulo Fernandes and João Tavares

(Conference Chairs)

Contents

Conference Organization

Executive Committee

Paulo R. Fernandes *(Portugal)* Conference Chair
João Manuel Tavares *(Portugal)* Conference Chair
João Folgado *(Portugal)*
Carlos Quental *(Portugal)*
Rui Ruben *(Portugal)*

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Christopher Jacobs *(USA)*

Laurent Cohen *(France)*
Leo Joskowicz *(Israel)*
Manuel González Hidalgo *(Spain)*
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Mário Forjaz Secca *(Portugal)*
Martyn Nash *(New Zealand)*
Michael S. Sacks *(USA)*
Miguel A. González Ballester *(Spain)*
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S. Ferguson *(Switerzland)*
S. Shirazi-Adl *(Canada)*
S. Evans *(UK)*
Sidney Fels *(Canada)*
T. Adachi *(Japan)*
Thomas Franz *(South Africa)*
Valentin Brimkov *(USA)*
W. Skalli *(France)*
Xiongbiao Luo *(Japan)*
Yuri Bazilevs *(USA)*
Zeyun Yu *(USA)*

Conference Information

Endorsed by

- Instituto Superior Técnico - ULisboa
- FEUP - UPorto
- IDMEC Instituto de Engenharia Mecânica
- Cardiff University
- Columbia University
- European Society of Biomechanics
- Sociedade Portuguesa de Biomecânica
- Taylor & Francis
- Turismo de Lisboa

Conference Venue

The 15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization takes place in Instituto Superior Tecnico (IST) Congress Center, situated at the Civil Engineering Building (Pavilhão de Civil) with the address:

Congress Center
(Civil Engineering Building)
Instituto Superior Técnico
Av. Rovisco Pais 1
1049-001 Lisboa

Secretariat Open Hours

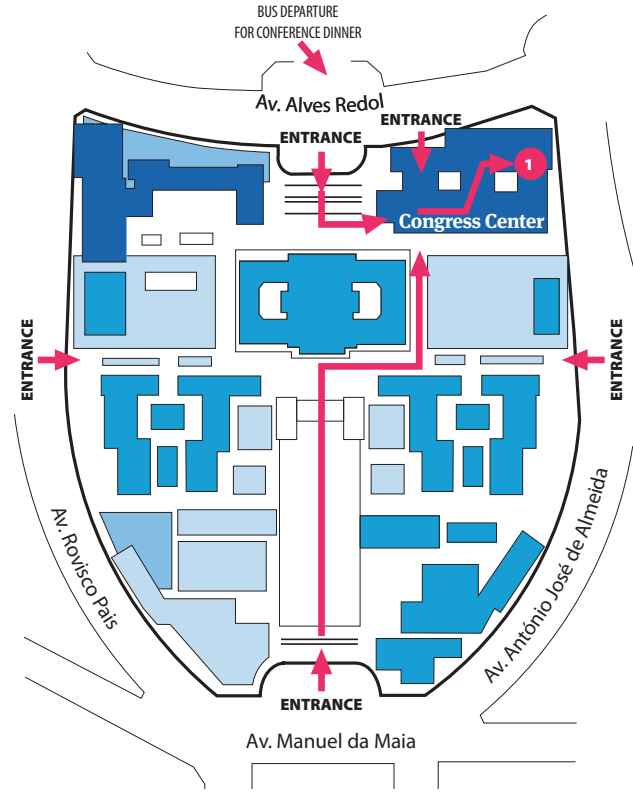
- Sunday, March 25, 17:00 -19:00
- Monday, March 26, 08:00 -18:00
- Tuesday, March 27, 08:00 -17:30
- Wednesday, March 28, 09:00 -14:00
- Thursday, March 29, 09:00 -17:30

Coffee-Breaks

The coffee-breaks will take place in the hall -2 (2nd Basement) of the conference center (see map of the conference center) and will be open to all participants. Kindly wear your Conference Badge.

Lunches

The Lunch tickets included in the package received during the registration will be accepted at the restaurant marked in the map below. The restaurant offer a few choices for lunch in self-service and has a daily vegetarian option. Note that the lunch tickets have different colors for the different days and are valid only for the day printed in the front.



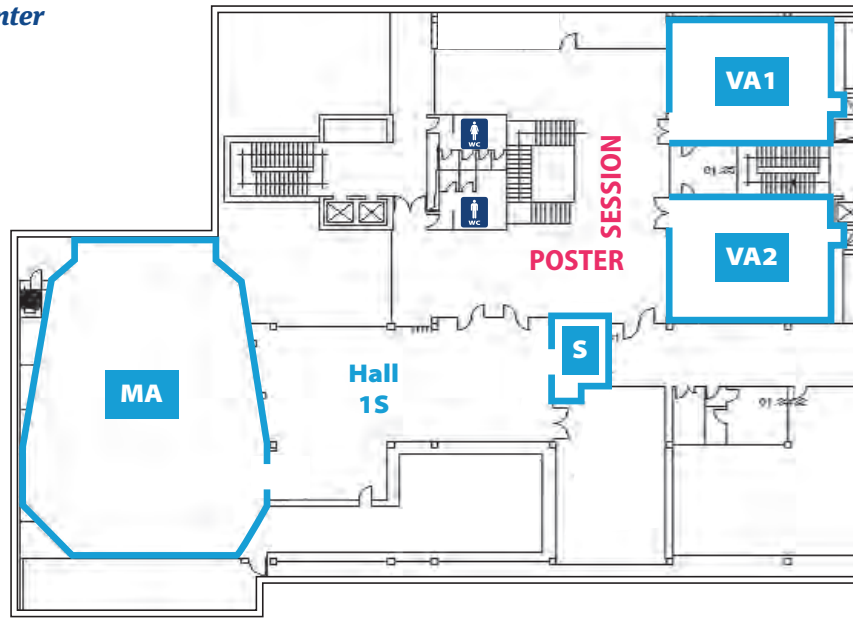
1- Restaurant

Congress Center Building
Floor 0 (Ground Floor)

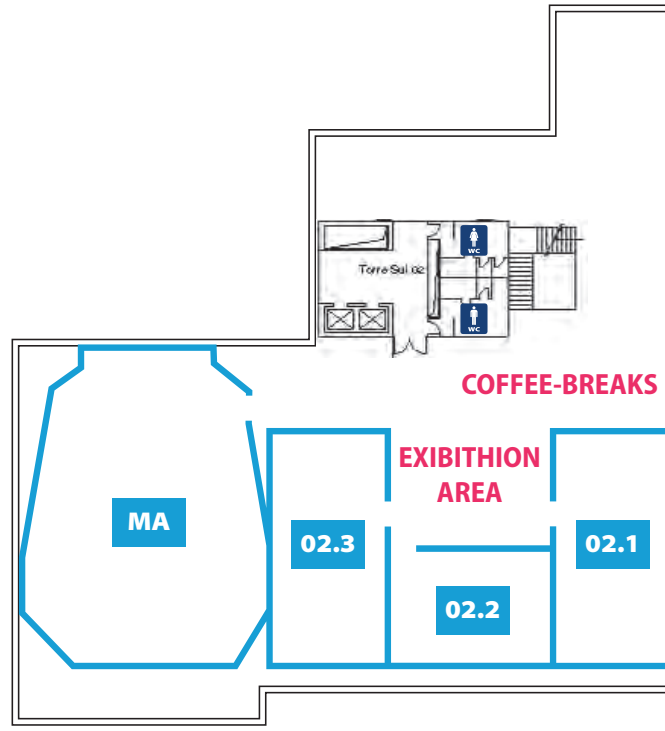
Conference Information

Congress Center Floor Plans

Congress Center
Floor -1
(1st Basement)



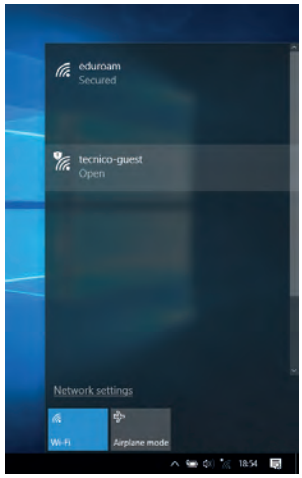
Congress Center
Floor -2
(2nd Basement)

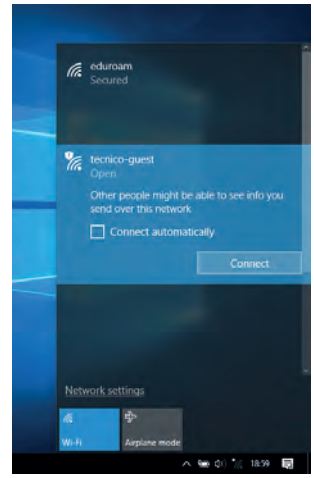


MA - Main Auditorium
VA1 - Session Room
VA2 - Session Room
S - Secretariat
02.1 - Session Room
02.2 - Session Room
02.3 - Session Room

Conference Information

Wireless Internet Access





Step 1: Browse available wireless networks and select **"tecnico-guest"**

Step 2: Open your web browser and access the website **"wifi.ist.utl.pt"**
(most of the computers will do it automatically)

Step 3: Click on the (blue) button **"Ligar"**

Step 4: Enter the following credentials: Username: **cmbbe2018**
Password: **EvHwnT**

Instructions for Presenters

- Each Oral presentation will take 15 minutes including discussion.
- The files required for the presentation (PowerPoint or PDF) should be uploaded, and tested to ensure compatibility, during the coffee or lunch breaks before the beginning of the session.
- The lecture rooms contain a Windows 10 PC, with Office 2016 and Acrobat PDF Reader, connected to a data projector. The use of personal computers is not recommended.
- Technical support will be provided on-site by the CMBBE 2018 staff to ensure a smooth delivery of all oral presentations.
- Posters will be displayed on vertical boards with maximum dimensions of 900mm (width) x 1200mm (height), which corresponds approximately to a standard A0-portrait.
- Posters should be set in the morning of Tuesday, 27th March and removed after the poster session.
- During the Poster Session the authors should be next to their posters.

Social Programme

Welcome Reception - Monday, 26th March - 18:30

Welcome reception will take place at conference site.

Tour visit to Cascais/Sintra - Wednesday, 28th March - 14:30

Buses will depart from IST (Rua Alves Redol) at 14:30. Please be there 10 minutes before the departure time and don't forget to bring your Tour/ Dinner Voucher.
We will depart to Cascais a cosmopolitan former fishing village, that in the 1940's was chosen as residence by exiled European Royalty, a stop will be made by the lovely bay filled with fishing boats.
The tour will continue by coast line of Guincho, with its superb beach areas, cliffs and where, close by, is located Cape Roca, the westernmost point of Continental Europe. It continues to Sintra, a small delightful town in the forest covered Mountain of Sintra, immortalized as "Glorious Eden" by the World famous poet Lord Byron.

Conference Dinner

The dinner will take place at Penha Longa Monastery. *(Quinta da Penha Longa, Estrada da Lagoa Azul, Sintra)*

The Monastery was founded in 1355 by Friar Vasco Martins that introduced the St. Jeronimos Order in Portugal.
In 1400 a church was built consecrated to Our Lady of Health. During the 15th and 16th centuries, Penha Longa was chosen by the Royal Family as a place for hunting, during the summer.
Memories of strong presences, such as King D. Manuel (1496) and King D. Sebastião (1580). During this period, a Palace to host the Kings and their guests, fountains and gardens, oratories and watermills were built.

General Tourist Information

Getting to Lisbon by air

Direct flights from most of European cities, North or South America and Africa land at the Portela Airport, terminal 1. A taxi ride from the airport to IST is about 4-5 km that takes 10-15 min, depending on traffic, and should cost around 8€. To downtown the taxi ride is about 7 km and should cost around 10€. 1.60€ is charged for the transportation of luggage or animals. A sure option is the "Taxi Voucher" a prepaid taxi service starting at 16.40€, on sale at the "Information Desk" in the arrival terminal. Lisbon Airport has its own Metro Station, Aeroporto - red line (see map of Lisbon with subway lines). Other options are the AeroBus and the Aeroshutle (3.5€).

Getting to Lisbon by car

Drivers can use highway A1 when coming from the North, highway A2, through the 25 de Abril bridge, when coming from the South, and highway A12, through Vasco da Gama bridge, when coming from the Northeast.

Getting to Lisbon by train

The St. Apolónia station is the terminal for trains arriving from the North of Portugal. Another option is to use the train station Oriente. From the South of Portugal an option is to use the train station Oriente. Connections to the metro lines exist at both stations (St. Apolónia - blue line, Oriente - red line).

Moving around

Taxi:

Lisbon is served by an extensive network of public transportation that can take you anywhere in the city and to its surroundings. Taxis (black and green or beige) are cheap when comparing to most of the European countries. They can be called by phone, picked-up on taxi plazas or stopped on the street. The fare on the taxi meter should start at 3.25€ (daytime pick-up) or 3.90€ (nighttime). Outside the city limits, city fares are charged per kilometer. 1.60€ is charged for the transportation of luggage or animals. Before taking a taxi, inquire about the fare.

Metro:

The Lisbon Metro is a very comfortable and easy way to reach most of the city, from 6:30 to 1:00. The Metro lines reach most of the city being the Metro stations close to IST:

- Alameda (red and green line)
- Saldanha (red and yellow line)

Bus

The bus routes cover all Lisbon and extend to its outskirts. The tickets can be pre-paid, at the counters of Carris, the surface transportation operator for Lisbon, or bought aboard the bus, electric cars or funiculars.
For IST hop off on one of the following bus stops:
Av. Manuel da Maia
Av. Rovisco Pais
Arco do Cego

Metro and Bus Fares:

Reusable card – 0.50 €
METRO/CARRIS – 1.45 €
CARRIS Bus – 1.80 € (on board fare)
Tram – 2.85 € (on board fare)

Trains

Suburban trains to Estoril and Cascais depart from the Cais do Sodré train station, to the south of the river cities from Roma-Areeiro (Entrecampos) while to Sintra the trains depart from Rossio train station or Oriente (Entrecampos). The ride to Cascais or to Sintra should take about 35-45 min, each way. The train ride to south of the river is a highlight as the train will cross the 25 de Abril bridge with magnificent views of Lisbon.
For IST the nearby train stations are:
Roma-Areeiro
Entrecampos

Other general information

- National emergency number: 112
- Time zone: GMT +1 summer time
- Electricity: 220V, 50 Hz
  with standard European power sockets
- Temperature: Average high 19ºC,
  Average low 13ºC
- Currency: Euro (€)
- Banks: working hours are
  8:30 – 15:00 *(Monday-Friday)*
- Pharmacies: 9:00 – 19:00
- Shops: 9:00 – 19:00
- Shopping Malls: 10:00 – 23:00

Main Museums in Lisbon:

- **Centro de Arte Moderna**
  (Modern Art Museum)
- **Museu do Oriente**
  (Oriente Museum)
- **Museu Calouste Gulbenkian**
  (Calouste Gulbenkian Museum)
- **Museu dos Coches**
  (Coach Museum)
- **Museu Nacional de Arte Antiga**
  (National Museum for Ancient Art)
- **Colecção Berardo**
  (The Berardo Collection)
- **Museu do Azulejo**
  (Tile Museum)

Main Monuments in Lisbon:

- **Aqueduto das Águas Livres**
  (Águas Livres' Aqueduct)
- **Basílica da Estrela**
  (Estrela Basilica)
- **Castelo de São Jorge**
  (Saint George's Castle)
- **Sé Patriarcal**
  (Patriarchal Church)
- **Mosteiro dos Jerónimos**
  (Jerónimos Monastery)
- **Padrão dos Descobrimentos**
  (Monument to the Overseas Discoveries)
- **Torre de Belém**
  (Belém Tower)

Map of Lisbon

linha **Azul** Blue line

linha **Amarela** Yellow line

linha **Verde** Green line

linha **Vermelha** Red line

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Scientific Programme

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26-29 March, 2018

Programme at a Glance

Hours	MONDAY, 26th March			TUESDAY, 27th March			WEDNESDAY, 28th March			THURSDAY, 29th March		
08:00	REGISTRATION											
08:45	OPENING											
09:00	PARALLEL SESSION 1	MA	1.1: SS Comp. modelling of cell mechanics	PARALLEL SESSION 3	VA1	**Workshop** - C-Motion	PARALLEL SESSION 5	VA1	**Workshop** - Synopsys	PARALLEL SESSION 6	VA1	**Workshop** - LifeLongJoints
09:30		VA2	1.2.: SS Mech. action medical techn. Processes I		MA	3.1: SS Musculoskeletal Mod. and Applicat. II		VA2	5.1: SS Soft Tissue Mechanics II		MA	6.1: SS Combining Multibody and FEM
		02.1	1.3: Biomedical Image Processing I		02.1	3.2: SS New Math. Trends Medical Imaging		02.2	5.2: Hard Tissue Biomech./Mechanobiology		02.2	6.2: Multiscale modelling in biomechanics
10:00		02.2	1.4: Respiratory Biomech. / Skin mechanics		VA2	3.3: SS Mech. action medical techn. Processes II		MA	5.3: Biomedical Image Processing II		VA2	6.3: Hemodynamics and CFD applications
					02.2	3.4: Biomaterials		02.1	5.4: Implants/orthotics/prosthetics/devices II		02.1	6.4: Tissue engineering and Bioprinting
10:30	*Coffee Break*			*Coffee Break*			*Coffee Break*			*Coffee Break*		
11:00	PLENARY I	Room MA	Hans Van Oosterwyck	PLENARY III	Room MA	Dominique Pioletti	PLENARY IV	Room MA	Daniela Iacoviello	PLENARY V	Room MA	Cees Oomens
11:30			Amit Gefen			Marc Thiriet			Christoph Bourauel			Jos Vander Sloten
12:00			Sam Evans			Michael Sacks			Estevam de las Casas			Wafa Skalli
									Martyn Nash			
12:30	*Lunch*			*Lunch*			*Lunch*			*Lunch*		
13:00												
13:30												
14:00	PLENARY II	Room MA	Cristian A. Linte	Room MA		**CMBBE Journal Best Paper Gerhard A. Holzapfel**	*Tour & Conference Dinner*			PARALLEL SESSION 7	VA1	**Workshop** - ArtiSynth
14:30			Saeed A. Shirazi-Adl	POSTER HALL		**POSTER SESSION**					MA	7.1: Cardiovascular Biomechanics
15:00			Fiorella Sgallari								VA2	7.2: SS Funct. Performance Joint Arthroplasty
											02.1	7.3: Biomedical Image Analysis
15:30	*Coffee Break*			*Coffee Break*						*Coffee Break*		
16:00	PARALLEL SESSION 2	VA1	**Workshop** - BETA	PARALLEL SESSION 4	MA	4.1: SS Musculoskeletal Mod. and Applicat. III				PARALLEL S. 8	MA	8.1: SS Non-invasive imaging of scoliosis
16:30		MA	2.1: SS Musculoskeletal Mod. and Applicat. I		VA2	4.2: SS Soft Tissue Mechanics I					VA2	8.2: Human movement and Rehabilitation
17:00		VA2	2.2: SS Dental Biomechanics		02.1	4.3: Modeling-Aided Design of Medical Devices					02.1	8.3: Meshless methods in biomechanics
17:30		02.2	2.3: Spine / Sports Biomechanics		02.2	4.4: Comp-aided surg./Mach. learning & CMBBE				CLOSING		
		02.1	2.4: Implants/orthotics/prosthetics/devices I									
18:00												
18:30	*Welcome Reception*											
19:00												
19:30												
23:00												

Parallel Session 1

Monday, **26th March**, 9:00-10:30

ROOM *MA*		CHAIR *H. Van Oosterwyck; Bart Smeets*	PS 1.1 - Special Session **Computational Modelling of Cell Mechanics**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	62	Monica Piergiovanni	**A LOOK INTO THE MECHANICAL PROPERTIES OF SINGLE CELLS: A TWO-PHASE CFD MODEL AND ITS VALIDATION** *Monica Piergiovanni, Gregor Holzner, Claudia Atzeni, Stavros Stavrakis, Elena Bianchi, Andrew Demello, Gabriele Dubini*
9:15	124	Payman Mosaffa	**HYBRID CELL-CENTRED/VERTEX MODEL FOR MULTICELLULAR SYSTEMS** *Payman Mosaffa, Jose Muñoz and Antonio Rodríguez-Ferran*
9:30	18	Jiao Chen	**A CHEMICO-MECHANICALLY INDUCED CELL MODEL WITH AN APPLICATION TO CANCER METASTASIS** *Jiao Chen, Daphne Weihs and Fred Vermolen*
9:45	87	João Pedro Ferreira	**MODELLING OF CROSS-LINKING DYNAMICS IN ACTIN NETWORKS** *João Pedro Ferreira, Marco Parente and Renato Natal Jorge*
10:00	135	Tommaso Ristori	**A STATISTICAL FRAMEWORK BASED ON THERMODYNAMICS AND BIOLOGICAL PRINCIPLES TO PREDICT CELLULAR MORPHOLOGY AND ORIENTATION ON SUBSTRATES WITH LINEAR PATTERNS** *T. Ristori, G. Buskermolen, S. Shishvan, N. Kurniawan, C. Bouten, F. Baaijens, S. Loerakker, V. Deshpande*

ROOM *VA2*		CHAIR *Amit Gefen; Alon Wolf*	PS 1.2 - Special Session **Modeling and simulations for describing mechanisms of action and determining efficacy of medical technologies and processes I**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	86	Natalia Lewandowska	**NUMERICAL STUDY OF CAROTID BIFURCATION ANGLE EFFECT ON BLOOD FLOW DISORDERS** *Natalia Lewandowska, Michał Ciałkowski, Maciej Micker, Marcin Warot, Andrzej Frąckowiak and Paweł Chęciński*
9:15	121	Daphne Weihs	**SYNERGISTIC INTERACTIONS BETWEEN INVASIVE CANCER CELLS AS A MEASURE FOR METASTATIC RISK** *Rakefet Rozen, Yulia Merkher and Daphne Weihs*
9:30	90	Michał Ciałkowski	**IMPACT OF PATCHES ON BLOOD FLOW DISORDERS IN CAROTID ARTERY** *Maciej Micker, Michał Ciałkowski, Natalia Lewandowska, Marcin Warot, Paweł Chęciński and Andrzej Frąckowiak*
9:45	52	Andrzej J. Nowak	**VALIDATION MEASUREMENTS AND COMPUTER SIMULATIONS OF THE NEWBORN'S BRAIN COOLING PROCESS** *Dominika Bandola, Andrzej J. Nowak, Marek Rojczyk, Ziemowit Ostrowski and Wojciech Walas*
10:00	139	Aurelien Macron	**DEVELOPMENT AND VALIDATION OF A NEW METHODOLOGY FOR THE FAST GENERATION OF PATIENT-SPECIFIC FE MODELS OF THE BUTTOCK FOR PRESSURE ULCER PREVENTION** *Aurelien Macron, Jennifer Doridam, Alexandre Verney, Hélène Pillet and Pierre-Yves Rohan*
10:15	136	Jose Munoz	**MECHANICAL ANALYSIS OF CENTRAL NERVOUS SYSTEM** *Jose Munoz, Enrique Martin Blanco, Katerina Karkali, Tim Saunders, Tlili Sham Leilah and Anand Singh*

ROOM 02.1		CHAIR Soo Yeol Lee; Rui Ruben	PS 1.3 Biomedical Image Processing I
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	8	Marcelo Duarte	**EXTRACTING AND EVALUATING TEXTURE FEATURES FROM BINARY GRADIENT CONTOURS OF MICROCALCIFICATIONS CLUSTERS IN BREAST MAMMOGRAMS** *Marcelo Duarte, Andre Alvarenga and Wagner Coelho de Albuquerque Pereira*
9:15	9	Soo Yeol Lee	**AN ADVANCED METAL ARTIFACT REDUCTION METHOD FOR A DENTAL CT** *Mohamed Hegazy, Min Hyoung Cho and Soo Yeol Lee*
9:30	151	Thomas Deckers	**A PLATFORM FOR HIGH-THROUGHPUT MONITORING OF SINGLE CELL AGGREGATION AND SPHEROID FORMATION** *Thomas Deckers, Toon Lambrechts, Stefano Viazzi, Gabriella Nilsson Hall, Ioannis Papantoniou, Veerle Bloemen and Jean-Marie Aerts*
9:45	156	Sébastien de Bournonville	**CONTRAST-ENHANCED MICROCT AND DEDICATED IMAGE PROCESSING FOR THE MORPHOLOGICAL CHARACTERIZATION OF MICRO-CARRIERS FOR LARGE SCALE STEM CELL EXPANSION** *Sébastien de Bournonville, Liesbet Geris and Greet Kerckhofs*
10:00	186	Luuk Voskuilen	**GENERATION OF A MUSCLE FIBRE ORIENTATION ATLAS OF THE IN VIVO TONGUE** *Luuk Voskuilen, Ludi Smeele, Alfons Balm, Ferdinand van der Heijden, Gustav Strijkers and Aart Nederveen*

ROOM 02.2		CHAIR Daniela Valdez-Jasso	PS 1.4 Respiratory biomechanics / Skin mechanics
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	102	Atsushi Shirai	**A METHODOLOGY TO GENERATE A RANDOMLY ORIENTED CAPILLARY NETWORK ON ALVEOLU** *Atsushi Shirai and Kentaro Yamada*
9:15	49	Yukihiro Michiwaki	**SIMULATION OF SWALLOWING INCLUDING ANATOMICAL STRUCTURE AND FOOD BOLUS FLOW USING FLUID-STRUCTURE INTERACTION METHOD** *Yukihiro Michiwaki, Takahiro Kikuchi, Tetsu Kamiya, Yoshio Toyama, Keigo Hanyu, Megumi Takai And Seiichi Koshizuka*
9:30	131	Bastian Schöneberger	**INVESTIGATION OF NATURAL HUMAN BREATHING IN A 5 GENERATION LUNG MODEL WITH NUMERICAL SIMULATIONS** *Bastian Schöneberger, Sven Jakulat and Antonio Delgado*
9:45	227	Georges Limbert	**A MATHEMATICAL MODEL OF THE CUTOMETER-SKIN COMPLEX TO EXTRACT VISCOELASTIC CONSTITUTIVE PARAMETERS OF THE SKIN** *Georges Limbert and Daniela Valdez-Jasso*
10:00	175	Jérôme Molimard	**MORPHO-MECHANICAL ANALYSIS OF RECONSTRUCTED SKIN UNDER TRACTION** *Simon Tupin, Jérôme Molimard, Valérie Cenizo, Thierry Hoc, Bertrand Sohm and Hassan Zahouani*

Coffee Break

Plenary Lectures

Monday, **26th March**, 11:00-12:30

ROOM *MA*		CHAIR *Paulo Fernandes*	**Plenary I**
TIME	**ID**	**PLENARY SPEAKER**	**TITLE**
11:00	261	Hans Van Oosterwyck	**MODELLING AND MEASURING CELL-MATRIX MECHANICAL INTERACTIONS** *Hans Van Oosterwyck*
11:30	57	Amit Gefen	**MEDICAL DEVICE-RELATED PRESSURE ULCERS: WHERE BIOMECHANICS SHOULD COME TO THE RESCUE** *Amit Gefen*
12:00	263	Sam Evans	**MODELS OF SOFT MATERIALS UNDER MULTIAXIAL LOADING** *Sam Evans*

Lunch

Plenary Lectures

Monday, **26th March**, 14:00-15:30

ROOM *MA*		CHAIR *João Tavares*	**Plenary II**
TIME	**ID**	**PLENARY SPEAKER**	**TITLE**
14:00	251	Cristian A. Linte	**FROM MEDICAL IMAGE COMPUTING TO COMPUTER-AIDED DIAGNOSIS TOOLS: SUCCESSES, CHALLENGES, GUIDELINES AND LESSONS LEARNED** *Cristian Linte*
14:30	244	Saeed A. Shirazi-Adl	**ON THE EQUILIBRIUM AND STABILITY OF THE KNEE JOINT IN GAIT** *Saeed A. Shirazi-Adl, Hafedh Marouane, Masoud Sharifi and Malek Adouni*
15:00	245	Fiorella Sgallari	**ENHANCING SPARSITY BEYOND CONVEXITY: APPLICATIONS TO THE RESTORATION AND SEGMENTATION OF MEDICAL IMAGES AND SURFACES** *Fiorella Sgallari*

Coffee Break

Parallel Session 2

Monday, **26th March**, 16:00-18:00

ROOM	WORKSHOP	
VA1	***BETA***	**From Reality to Virtuality** *Beta Cae Systems International AG*

ROOM		CHAIR	PS 2.1 - Special Session **Musculoskeletal Models and Applications I**
MA		***H. Schmidt; M. El-Rich***	
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:00	70	**Hendrik Schmidt**	**ESTIMATION OF LOADS ON HUMAN LUMBAR SPINE - A CRITICAL REVIEW OF PAST IN VIVO AND COMPUTATIONAL MODEL STUDIES** *Hendrik Schmidt, Aboulfazl Saeed Shirazi-Adl, Navid Arjman and Marcel Dreischarf*
16:15	24	**Babak Bazrgari**	**TRUNK MUSCLE FORCES AND SPINAL LOADS DURING SIT-TO-STAND AND STAND-TO-SIT ACTIVITIES: DIFFERENCES BETWEEN PERSONS WITH AND WITHOUT UNILATERAL TRANSFEMORAL AMPUTATION** *Iman Shojaei, Brad Hendershot, Matthew Ballard, Julian Acasio, Christopher Dearth and Babak Bazrgari*
16:30	35	**Saeed A. Shirazi-Adl**	**SUBJECT-SPECIFIC TRUNK MUSCULOSKELETAL MODELING: CHARACTERISTICS, VALIDATION, AND APPLICATIONS** *Farshid Ghezelbash, Saeed A. Shirazi-Adl, Zakaria El Ouaaid, André Plamondon and Navid Arjmand*
16:45	68	**Tao Liu**	**EFFECTS OF LUMBO-PELVIC RHYTHM ON TRUNK MUSCLE FORCES AND DISC LOAD DURING FORWARD FLEXION: COMBINED MUSCULOSKELETAL AND FINITE ELEMENT MODELING** *Tao Liu, Kinda Khalaf and Marwan El-Rich*
17:00	69	**Tito Bassani**	**ASSESSING THE RELATION BETWEEN SPINO-PELVIC PARAMETERS AND LUMBAR LOADS THROUGH MUSCULOSKELETAL MODELING APPROACH** *Tito Bassani and Fabio Galbusera*
17:15	73	**Marwan El-Rich**	**LOAD-SHARING IN HAND-HELD STANDING POSTURE: COMBINED MUSCULOSKELETAL AND FINITE ELEMENT MODELING** *Tao Liu, Kinda Khalaf and Marwan El-Rich*
17:30	125	**Farshid Ghezelbash**	**SUBJECT-SPECIFIC RISK ASSESSMENT OF OBESITY AND AGEING IN SPINE BIOMECHANICS** *Farshid Ghezelbash, Saeed A. Shirazi-Adl, André Plamondon and Navid Arjmand*
17:45	98	**Mohammad Nikkhoo**	**DEVELOPMENT OF A VALIDATED MUSCULOSKELETAL MODEL TO PREDICT SPINAL LOADING FOR VOLLEYBALL ATHLETES** *Mohammad Nikkhoo, Mahsa Hojati, Marwan El-Rich, Mohamad Parnianpour and Kinda Khalaf*

ROOM *VA2*		CHAIR *C.P. Bourauel ; L. Keilig*	PS 2.2 - Special Session **Dental Biomechanics**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:00	45	**Agnese Brunzini**	**FINITE ELEMENTS ANALYSIS OF THE STRESS DISTRIBUTION ON TEMPOROMANDIBULAR JOINT DUE TO THE USE OF MANDIBULAR ADVANCEMENT DEVICES** *Agnese Brunzini, Marco Mandolini, Steve Manieri, Michele Germani and Alida Mazzoli*
16:15	37	**Sameh Talaat**	**THREE DIMENSIONAL EVALUATION OF THE HOLOGRAPHIC PROJECTION IN DIGITAL DENTAL MODELS SUPERIMPOSITION USING HOLOLENS DEVICE** *Sameh Talaat, Christoph Bourauel, Ahmed Kaboudan and Nivine Ragy*
16:30	39	**Junliang Chen**	**NUMERICAL INVESTIGATIONS OF BONE REMODELLING AROUND THE MOUSE MANDIBULAR MOLAR PRIMORDIA** *Junliang Chen, Yun He, Ludger Keilig, Susanne Reimann, Istabrak Hasan, Ralf Radlanski and Christoph Bourauel*
16:45	22	**Guillaume Haiat**	**ASSESSING DENTAL IMPLANT STABILITY USING A QUANTITATIVE ULTRASOUND TECHNIQUE AND RESONANCE FREQUENCY ANALYSIS** *Romain Vayron, Vu-Hieu Nguyen and Guillaume Haiat*
17:00	38	**Susanne Reimann**	**BIOMECHANICAL ANALYSIS OF TOOTH MOVEMENTS IN CASE OF BONE LOSS AND ANTERIOR CROWDING IN THE LOWER JAW USING FINITE ELEMENT METHODS** *Susanne Reimann, Dorna Baghdadi, Christoph Reichert, Ludger Keilig, Andreas Jäger and Christoph Bourauel*
17:15	212	**Ana Messias**	**REHABILITATION OF KENNEDY CLASS I PATIENTS WITH IMPLANT-ASSISTED REMOVABLE PARTIAL DENTURES: A FINITE ELEMENT STUDY** *Ana Messias, Maria Augusta Neto, Pedro Nicolau, Fernando Guerra, Luis Manuel Roseiro and Ana Martins Amaro*
17:30	23	**Istabrak Hasan**	**NUMERICAL INVESTIGATION OF BONE HEALING AROUND IMMEDIATELY LOADED DENTAL IMPLANTS USING SIKA DEER ANTLERS AS IMPLANT BED** *Istabrak Hasan, Yun He, Ludger Keilig, Dominik Fischer, Luisa Ziegler, Gerhard Wahl and Christoph Bourauel*

ROOM *02.2*		CHAIR *André Castro*	PS 2.3 **Spine / Sports biomechanics**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:00	64	**Gavin Day**	**INVESTIGATING METHODS OF MODELLING AUGMENTATION IN HUMAN LUMBAR VERTEBRAE** *Gavin Day, Alison C. Jones and Ruth K. Wilcox*
16:15	96	**Ryutaro Himeno**	**RELATIONSHIP BETWEEN MINIMUM FOOT CLEARANCE, WAIST ROTATION AND AGING: TOWARDS FALL PREVENTION** *Ryutaro Himeno, Shigeho Noda, Gen Masumoto, Keisuke Okuno, Zhe Sun, Andrzej Cichocki and Hiroshige Takeichi*
16:30	114	**Hiroshige Takeichi**	**DYNAMIC STABILITY OF DAILY-LIFE WALKING USING INERTIAL MEASUREMENT UNIT** *Zhe Sun, Hiroshige Takeichi, Gen Masumoto, Shigeho Noda, Ryutaro Himeno and Andrzej Cichocki*
16:45	94	**Fabio Galbusera**	**PREDICTION OF THE RISK OF VERTEBRAL FRACTURES IN METASTATICALLY INVOLVED SPINES** *Fabio Galbusera, Tito Bassani, Gloria Casaroli and Zhihui Qian*
17:00	224	**Logan Miller**	**ESTIMATION OF 6 DEGREE OF FREEDOM ACCELERATIONS FROM HEAD IMPACT TELEMETRY SYSTEM OUTPUTS FOR COMPUTATIONAL MODELING** *Logan Miller, Jillian Urban and Joel Stitzel*

ROOM *02.1*		CHAIR *Rui Ruben*	PS 2.4 Implants/orthotics/prosthetics/devices I
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:00	32	**Yasmine Boulanaache**	**SENSITIVITY ANALYSIS OF A PATIENT-SPECIFIC FINITE ELEMENT MODEL OF SHOULDER ARTHROPLASTY** *Yasmine Boulanaache, Gerard Güell Bartrina, Fabio Becce, Dominique Pioletti, Alexandre Terrier and Alain Farron*
16:15	174	**Carlos Quental**	**BONE ADAPTATION PROCESS OF THE HUMERUS TO RESURFACING AND STEMLESS IMPLANTS: A COMPUTATIONAL ANALYSIS** *Beatriz Santos, Carlos Quental, João Folgado, Marco Sarmento and Jacinto Monteiro*
16:30	44	**Louis Ferreira**	**POLYETHYLENE GLENOID COMPONENT BACKSIDE GEOMETRY INFLUENCES FIXATION IN TOTAL SHOULDER ARTHROPLASTY** *Nikolas Knowles, G Daniel G Langohr, George Athwal and Louis Ferreira*
16:45	85	**Immaculada Llop-Harillo**	**COMPUTATION OF GRASP QUALITY METRICS IN OPENHAND SIMULATOR TO IMPROVE A 3D PRINTED PROSTHETIC HAND** *Immaculada Llop-Harillo, Carlos Rubert and Antonio Pérez-González*
17:00	110	**Jumpei Takada**	**FINITE ELEMENT ANALYSIS ON THE INFLUENCE OF THE DISTANCE BETWEEN ANTERIOR AND POSTERIOR PAPILLARY MUSCLES ON THE STRESS DISTRIBUTION OF THE STENTLESS MITRAL VALVE AT CLOSURE** *Jumpei Takada, Xiaodong Zhu, Keitarou Mahara, Hitoshi Kasegawa, Mituo Umezu and Kiyotaka Iwasaki*
17:15	112	**Jose Vicente García-Ortiz**	**LINEAR IDENTIFICATION PROCEDURE TO OBTAIN A LOW COMPUTATIONAL COST MODEL FOR HAND GRASPING IN ANTHROPOMORPHIC HANDS** *Jose Vicente García-Ortiz, Mora Marta Covadonga, Andrés Javier, Perez-González Antonio and Fuentes Jose Feliciano*
17:30	78	**Anatolie Timercan**	**LIMB SPARING IN DOGS USING PATIENT-SPECIFIC ENDOPROSTHESES AND CUTTING GUIDES: DESIGN, MANUFACTURE AND PRELIMINARY VALIDATION** *Anatolie Timercan, Vladimir Brailovski, Yvan Petit, Bertrand Lussier and Bernard Séguin*
17:45	107	**Hamza A. Butt**	**LUBRICATION MODEL OF THE HUMAN KNEE IMPLANT** *Hamza A. Butt, Lee Nissim, Leiming Gao, Connor Myant and Rob Hewson*

Welcome Reception

Parallel Session 3

Tuesday, **27th March**, 9:00-10:30

ROOM *VA1*	WORKSHOP *C-MOTION*	**Working with C-Motion's Dynamic Stereo X-ray Software Suite** *C-Motion Biomechanics Software*

ROOM *MA*		CHAIR *B. Bazrgari; F. Galbusera*	PS 3.1 – Special Session **Musculoskeletal Models and Applications II**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	71	Andrea Calvo-Echenique	**NUMERICAL SIMULATIONS OF BONE REMODELLING AFTER NUCLEOTOMY** *Andrea Calvo-Echenique, Maxim Bashkuev, Sandra Reitmaier, Amaya Pérez-Del Palomar and Hendrik Schmidt*
9:15	74	Kinda Khalaf	**EVALUATION OF CERVICAL LAMINECTOMY ON INTERSEGMENTAL MOTIONS USING A VALIDATED PARAMETRIC SUBJECT-SPECIFIC FINITE ELEMENT MODEL** *Kinda Khalaf, Mohammad Nikkhoo, Marwan El-Rich and Chih-Hsiu Cheng*
9:30	215	Wafa Skalli	**A FINITE ELEMENT BASED METHOD FOR SUBJECT SPECIFIC SOFT TISSUE ARTEFACT REDUCTION IN MOTION ANALYSIS** *Wafa Skalli, Tristan Hermel, Xavier Bonnet, Ayman Assi and Hélène Pillet*
9:45	207	Kenneth Ip	**DEVELOPMENT OF AN IN-VITRO INTRINSICALLY LOADED TEMPOROMANDIBULAR FORCE SIMULATOR AND FAST COMPUTATIONAL MODEL BASED ON METHOD OF EXTERNAL APPROXIMATIONS** *Kenneth Ip, Peng You, Nikolas Knowles, Corey Moore and Louis Ferreira*
10:00	216	Sérgio B. Gonçalves	**DEVELOPMENT OF A MULTIBODY-BASED METHODOLOGY FOR SIMULATION OF BIOMECHANICAL SYSTEMS USING NATURAL COORDINATES** *Sérgio B. Gonçalves and Miguel Tavares da Silva*
10:15	55	Sadegh Naserkhaki	**FINITE ELEMENT (FE) CALCULATION OF THE SPINAL LOAD-SHARING VIA SEQUENTIAL DISSECTION OF THE SPINAL PARTS** *Sadegh Naserkhaki, Mohammad-Javad Kheyrkhah, Ava Maboudmanesh, Fiona Youkhanva and Marwan El-Rich*

ROOM *02.1*		CHAIR *F. Sgallari; A. Lanza; S. Morigi*	PS 3.2 – Special Session **New Mathematical Trends in Medical Imaging**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	168	Alessandro Lanza	**IMAGE SEGMENTATION BASED ON A CONVEX NON-CONVEX VARIATIONAL MODEL** *Raymond Chan, Alessandro Lanza, Serena Morigi and Fiorella Sgallari*
9:15	169	Serena Morigi	**A VARIATIONAL COUPLED MODEL FOR JOINT SUPER-RESOLUTION AND SEGMENTATION IN A DIAGNOSTIC IMAGING SYSTEM** *Serena Morigi, Damiana Lazzaro and Patrizia Melpignano*
9:30	170	Giuseppe Placidi	**ADAPTIVE ACQUISITION AND RECONSTRUCTION TECHNIQUES FOR SPARSE MAGNETIC RESONANCE IMAGING** *Giuseppe Placidi, Luigi Cinque and Matteo Spezialetti*
9:45	230	Eliete Biasotto Hauser	**IMAGE DERIVED CAROTID ARTERIAL INPUT FUNCTION AS AN INVERSE PROBLEM IN KINETIC MODELING OF [18F]2-FLUORO-2 DEOXY-D-GLUCOSE(FDG) IN ALZHEIMER DISEASE** *Eliete Biasotto Hauser, Gianina Teribele Venturin, Samuel Greggio and Jaderson Costa Da Costa*

ROOM *VA2*		CHAIR *Amit Gefen; Alon Wolf*	PS 3.3 - Special Session **Modeling and simulations for describing mechanisms of action and determining efficacy of medical technologies and processes II**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	95	Marzieh Ovesy	**HOMOGENIZED FINITE ELEMENT ANALYSIS OF THE BONE-IMPLANT INTERFACE: ROLE OF PRESS-FIT, DAMAGE AND FRICTION** *Marzieh Ovesy and Philippe Zysset*
9:15	104	Nora Millor	**DYNAMIC STRENGTH ASSESSMENT IN AN OLDER-OLD FRAIL POPULATION: TO A CLINICAL TOOL DEVELOPMENT** *Nora Millor, Marisol Gomez, Pablo Lecumberri, Alicia Martinez, Eduardo Lusa Cadore and Mikel Izquierdo*
9:30	183	William R. Taylor	**AN UPDATE ON THE CAMS-KNEE DATASET: A KEY DATASET FOR THE COMPREHENSIVE ASSESSMENT OF THE MUSCULOSKELETAL SYSTEM** *William R. Taylor, Pascal Schütz, Joern Dymke, Hamed Hosseini Nasab, Adam Trepczynski and Philipp Damm*
9:45	205	Iva Burova	**PARAMETERISED MATHEMATICAL MODEL OF OSTEOBLAST KINETICS IN A STATIC MICROCARRIER CULTURE** *Iva Burova, Ivan Wall and Rebecca Shipley*
10:00	222	Zdenek Horak	**NUMERICAL FE SIMULATIONS AND EVALUATION OF TWO TYPE HEEL FRACTURE FIXATION** *Zdenek Horak, Jan Pazour and Valer Dzupa*
10:15	209	Hadar Shaulian	**A ROBOTIC SHOE FOR MONITORING AND MANIPULATION OF THE FOOT CENTER OF PRESSURE FOR REHABILITATION AND DIAGNOSTIC** *Alon Wolf and Hadar Shaulian*

ROOM *02.2*		CHAIR *Ana Moita*	PS 3.4 **Biomaterials**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	17	Naser Nasrollahzadeh	**ROLE OF FLOW DEPENDENT AND FLOW INDEPENDENT VISCOELASTICITY ON TIME DEPENDENT BEHAVIOUR OF VISCO-POROUS SCAFFOLDS** *Naser Nasrollahzadeh and Dominique Pioletti*
9:15	25	Monica Faria	**INTEGRALLY SKINNED ASYMMETRIC CELLULOSE ACETATE-SILICA MEMBRANES FOR EXTRACORPOREAL BLOOD ULTRAFILTRATION** *Monica Faria, Cintia Moreira and Maria Norberta de Pinho*
9:30	190	Ana Moita	**EFFECT OF BIOFLUID RHEOLOGY AND WETTABILITY ON DROPLET DYNAMICS IN LAB-ON-CHIP SYSTEMS FOR CANCER DIAGNOSTICS** *Frederico Jacinto, Ana Moita and Antonio Moreira*

Coffee Break

Plenary Lectures

Tuesday, **27th March**, 11:00-12:30

ROOM *MA*		CHAIR *Christopher Jacobs*	**Plenary III**
TIME	**ID**	**PLENARY SPEAKER**	**TITLE**
11:00	254	Dominique Pioletti	**HYDROGEL AS A MODEL SYSTEM TO STUDY DISSIPATION PHENOMENA IN SOFT TISSUE** *Dominique Pioletti*
11:30	235	Marc Thiriet	**MONOLITHIC SOLVER FOR BLOOD FLOW IN LARGE VALVED VEINS OF INFERIOR LIMBS** *Chen-Yu Chiang, Olivier Pironneau, Tony W. H. Sheu and Marc Thiriet*
12:00	252	Michael Sacks	**MULTI-RESOLUTION MODELS OF THE MITRAL HEART VALVE** *Michael Sacks*

Lunch

CMBBE Journal best paper

Tuesday, **27th March**, 14:00-14:30

ROOM *MA*	CHAIR *Christopher Jacobs*	**CMBBE Journal best paper**
TIME	**PLENARY SPEAKER**	**TITLE**
14:00	Gerhard A. Holzapfel	**A HYPERELASTIC BIPHASIC FIBRE-REINFORCED MODEL OF ARTICULAR CARTILAGE CONSIDERING DISTRIBUTED COLLAGEN FIBRE ORIENTATIONS: CONTINUUM BASIS, COMPUTATIONAL ASPECTS AND APPLICATIONS** *David M. Pierce, Tim Ricken and Gerhard A. Holzapfel*

Poster Session

Tuesday, **27th March**, 14:00-15:30

ROOM *Poster hall*		Poster	
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
14:30	19	**Jéssica Suzuki Yamanaka**	**EFFECTS OF SWIMMING ON THE STRENGTH OF THE ANTERIOR CRUCIATE LIGAMENT OF SEDENTARY RATS** *Jéssica Suzuki Yamanaka, Heloisa Ferreira Spagnoli, Marcela Britto de Paiva, Carla Tereza de Oliveira, Rita de Cássia Stela Cossalter, Bruna Leonel Carlos, Gabriela Rezende Yanagihara, Ana Paula Macedo and Antonio Carlos Shimano*
14:30	20	**Guillaume Haiat**	**FINITE ELEMENT MODELING OF THE PRIMARY STABILITY OF ACETABULAR CUP IMPLANTS** *Maria-Letizia Raffa, Vu-Hieu Nguyen and Guillaume Haiat*
14:30	28	**Helio Pedrini**	**3D LANCZOS INTERPOLATION FOR MEDICAL VOLUMES** *Thiago Moraes, Paulo Amorim, Jorge Silva and Helio Pedrini*
14:30	33	**Salih Celik**	**SIMULATION OF BONE HEALING PROCESSES AROUND DENTAL IMPLANTS DURING THE HEALING PERIOD** *Salih Celik, Ludger Keilig, Istabrak Hasan and Christoph Bourauel*
14:30	36	**Tania Douglas**	**SMARTPHONE IMAGE-BASED DETECTION OF LATENT TUBERCULOSIS INFECTION** *Ronald Dendere, Tinashe Mutsvangwa, Rene Goliath, Molebogeng Rangaka, Ibrahim Abubakar and Tania Douglas*
14:30	42	**Stjepan Piličić**	**INVERSE MODELLING FOR MATERIAL PARAMETERS IDENTIFICATION OF SOFT TISSUES** *Stjepan Piličić, Kristina Marković and Marina Franulović*
14:30	47	**Munyaradzi Matose**	**AIRBORNE INFECTION CONTROL THROUGH VENTILATION IN MINIBUS TAXIS** *Munyaradzi Matose, Mladen Poluta and Tania Douglas*
14:30	53	**Paulo Ambrosio**	**AREA QUANTIFICATION IN NATURAL IMAGES FOR ANALYSIS OF DENTAL CALCULUS REDUCTION IN SMALL ANIMALS** *Nilo Varela, Renata Alberto Carlos, Susana Marrero Iglesias and Paulo Ambrosio*
14:30	66	**Daniel Dantchev**	**3D GEOMETRICAL MATHEMATICAL STUDY AND VISUALIZATION OF THE HUMAN UPPER LIMB MANIPULATOR MASS MOMENTS OF INERTIA** *Daniel Dantchev, Gergana Nikolova and Alexander Kazakoff*
14:30	67	**Miloslav Vilimek**	**EXPERIMENTAL MEASUREMENT AND NUMERICAL SIMULATION OF TEMPERATURE DURING DRILLING WITH FOUR SPECIFIC DENTAL DRILLS** *Miloslav Vilimek, Zdenek Horak, Tomas Goldmann and Petr Tichy*
14:30	105	**Lee Nissim**	**MODELLING SYNOVIAL FLUID RHEOLOGY IN ELASTO-HYDRODYNAMICLUBRICATION** *Lee Nissim, Hamza A. Butt, Leiming Gao, Connor Myant and Robert Hewson*
14:30	108	**Dan Wu**	**COMPARISON OF DIGITAL VOLUME CORRELATION APPROACHES FOR SINGLE TRABECULAR BONE** *Dan Wu, Stephen J. Ferguson, Cecilia Persson and Per Isaksson*
14:30	115	**Johannes D. Medeiros Jr**	**COMPRESSED SENSING APPLIED TO ULTRASOUND IMAGE RF RAW DATA: EVALUATION OF IMAGE RECONSTRUCTION** *Johannes D. Medeiros Jr and Eduardo T. Costa*
14:30	116	**Alejandro López**	**MORPHOLOGY AND ADHESION OF SILICON NITRIDE COATINGS UPON SOAKING IN FETAL BOVINE SERUM** *Alejandro López, Luimar Correa Filho, Mathilde Cogrel, Håkan Engqvist, Susann Schmidt, Hans Högberg and Cecilia Persson*

ROOM *Poster hall*		Poster	
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
14:30	130	**Andre Pilastri**	**SEGMENTATION OF SKIN IN DERMATOSCOPIC IMAGES USING SUPERPIXELS COMBINED WITH COMPLEX NETWORKS** *Andre Pilastri, Joao Papa and João Manuel R. S. Tavares*
14:30	142	**Vladimir Kotev**	**BASIC INERTIAL CHARACTERISTICS OF HUMAN BODY BY WALKING** *Vladimir Kotev, Gergana Nikolova and Daniel Dantchev*
14:30	153	**Carlos Gulo**	**DISCOVERING TIME-CONSUMING SNIPPETS IN A MEDICAL IMAGE SEGMENTATION ALGORITHM** *Carlos A.S. J. Gulo, Antonio C. Sementille and João Manuel R. S. Tavares*
14:30	155	**Kodjo Moglo**	**BIOMECHANICS OF THE UPER CERVICAL SPINE IN RESISTING ANTERIOR/POSTERIOR AND RIGHT LOADING** *Wissal Mesfar, Lucie Pelland and Kodjo Moglo*
14:30	161	**Marcela Britto de Paiva**	**HIGH-SPEED MECHANICAL TORSION TEST IN FEMURS OF RATS SUBMITTED TO VIBRATORY PLATFORM TRAINING** *Marcela Britto de Paiva, Adriely Bittencourt Morgenstern Magyori, Jéssica Suzuki Yamanaka, Bruna Leonel Carlos, Carla Teresa de Oliveira, Rita De Cássia Stela Cossalter, Gabriela Rezende Yanagihara, Jorge Jorge Caiolo Imori Jr, Ana Paula Macedo and Antonio Carlos Shimano*
14:30	163	**Baharan Pourahmadi**	**INVESTIGATION OF EFFICIENT COMPUTATIONAL TECHNICS FOR FOOD BREAKDOWN MODELING, WITH APPLICATIONS IN MAXILLOFACIAL RECONSTRUCTIVE SURGERY** *Baharan Pourahmadi, Amir Abdi and Sidney Fels*
14:30	167	**Xiaodong Zhu**	**FINITE ELEMENT ANALYSIS OF THE RADIAL ARTERY COMPRESSION DEVICES TO INVESTIGATE RELATIONSHIPS BETWEEN AN INFLATION VOLUME AND COMPRESSION PRESSURE OF WRIST TISSUE** *Xiaodong Zhu, Yasuyuki Mizutani, Mitsuo Umezu and Kiyotaka Iwasaki*
14:30	176	**Dai-Soon Kwak**	**DEVELOPMENT OF AN EXTREMITY LIFTING AND TRACTION DEVICE: ASSIST FOR PRE-OPERATIVE DISINFECTION** *Dai-Soon Kwak, Tae Soo Bae, Ho-Jung Cho and Soyeon Kim*
14:30	177	**Tae Soo Bae**	**BIOMECHANICAL EFFECT OF TRACTION FORCES ON FEMORAL FRACTURE REDUCTION AS CHANGES OF BMI BY REDUCTION-ASSISTIVE ROBOT SYSTEM** *Tae Soo Bae, Sang Ki Lee and Dai-Soon Kwak*
14:30	179	**Mohan Jayatilake**	**ESTIMATION OF UNCERTAINTY OF T1 OF BONE MARROW IN LUMBAR VERTEBRAE AT 3T MRI** *Mohan Jayatilake and Teresa Gonçalves*
14:30	181	**Rui B. Ruben**	**TRACHEOBRONCHIAL STENTS ACCOMMODATION ANALYSIS** *Salvato Feijó, Rui B. Ruben, Mário S. Correia, Henrique Almeida and Carlos A. Campos*
14:30	184	**Antonio Shimano**	**ANALYSIS OF TENSIONS IN RADIO FIXATION PLATE BY THE FINITE ELEMENT METHOD** *Leonardo Battaglion, Antonio Tuffi, Ana Paula Macedo, Henrique Idogava, Jorge Silva and Antonio Shimano*
14:30	188	**André Castro**	**NUMERICAL AND EXPERIMENTAL CHARACTERIZATION OF TPMS BASED SCAFFOLDS** *Júlia Pinheiro, Rui Ruben, André Castro, José Miranda Guedes and Paulo Fernandes*
14:30	203	**Krzysztof Zerdzicki**	**THE INFLUENCE OF PRE-DRILLING ON THE MECHANICAL PROPERTIES OF THE HUMAN FEMORAL HEAD BONE** *Krzysztof Zerdzicki, Marcin Ceynowa and Pawel Klosowski*

ROOM *Poster hall*		Poster	
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
14:30	211	**Wafa Skalli**	**PATIENT-SPECIFIC FE MODELING OF THE INFERIOR CERVICAL SPINE** *Maxim Van Den Abbeele, Pierre Coloma, Sébastien Laporte, Baptiste Sandoz, Dominique Bonneau, Cédric Barrey And Wafa Skalli*
14:30	218	**Antônio Shimano**	**ANALYSIS AND PROCESSING OF PHOTOELASTIC IMAGES OF REFLECTION OF A CERVICAL COLUMN FIXING SYSTEM** *Rodrigo Guimaraes, Antônio Shimano, Marcela Paiva and Leonardo Rigobello*
14:30	231	**Jacek Tarasiuk**	**SOME IMPORTANT ISSUES OF MIL AND LFD ANISOTROPY MEASURES THAT USERS ARE USUALLY NOT CONSCIOUS** *Krzysztof Janc, Jacek Tarasiuk, Pawel Lipinski, Anne-Sophie Bonnet and Wronski Sebastian*
14:30	232	**Rita Ribeiro**	**BONE REMODELLING ANALYSIS OF THE TIBIA AFTER A TOTAL KNEE ARTHROPLASTY** *Rita Ribeiro, Angela Chan, Joao Folgado, Paulo R. Fernandes and Joao Gamelas*
14:30	233	**Danilo Jodas**	**A TWO-STAGE CLASSIFICATION APPROACH FOR THE IDENTIFICATION OF CALCIFIED COMPONENTS IN ATHEROSCLEROTIC LESIONS OF THE CAROTID ARTERY IN COMPUTED TOMOGRAPHY ANGIOGRAPHY IMAGES** *Danilo Samuel Jodas, Aledir Silveira Pereira and João Manuel R. S. Tavares*
14:30	237	**Alex Araujo**	**AN HERBIVOROUS ARTIFICIAL LIFE BASED MODEL FOR IMAGE SEGMENTATION** *Alex Araujo, Christos Constantinou and João Manuel R. S. Tavares*
14:30	238	**Martyn Nash**	**IN-VIVO MEASUREMENT OF SOFT TISSUE 3D GEOMETRY AND SURFACE DEFORMATIONS** *Amir Hajirassouliha, Emily Lam Po Tang, Dong Hoon Choi, Debbie Zhao, Andrew J. Taberner, Martyn Nash and Poul M. F. Nielsen*
14:30	239	**João Ferreira Nunes**	**HUMAN RECOGNITION AND CLASSIFICATION BASED ON GAIT ANALYSIS USING DEPTH SENSORS** *João Ferreira Nunes, Pedro Miguel Moreira and João Manuel R. S. Tavares*
14:30	242	**Daniel Nogueira**	**COMPARING P, PD, PI AND PDI CONTROLLERS IN CONTROLLING A BRAIN COMPUTER INTERFACE FOR CLINICAL APPLICATION** *Daniel Nogueira, Victor Hugo de Albuquerque and João Manuel R. S. Tavares*

Coffee Break

Parallel Session 4

Tuesday, **27th March**, 16:00-18:00

ROOM *MA*		CHAIR *S. Shirazi-Adl; W. Skalli*	PS 4.1 - Special Session **Musculoskeletal Models and Applications III**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:00	143	**Bhrigu Lahkar**	**FAST SUBJECT SPECIFIC FINITE ELEMENT MESH GENERATION OF KNEE JOINT FROM BIPLANAR X-RAY IMAGES** *Bhrigu Kumar Lahkar, Pierre-Yves Rohan, Hélène Pillet, Patricia Thoreux and Wafa Skalli*
16:15	180	**Seyyed H. Hosseini-Nasab**	**UNCERTAINTY QUANTIFICATION IN JOINT REACTION FORCE ANALYSIS DURING A SIMULATED SQUAT ACTIVITY** *Alexandra C. Vollenweider, Seyyed H. Hosseini-Nasab, William R. Taylor and Silvio R. Lorenzetti*
16:30	15	**Masoud Sharifi**	**A COMPUTATIONAL LOWER-EXTREMITY MODEL TO QUANTIFY THE STABILITY OF AN ANTERIOR CRUCIATE LIGAMENT DEFICIENT KNEE JOINT AT HEEL STRIKE: GAIT PARAMETERS MARKING COPERS FROM NON-COPERS** *Masoud Sharifi, Saeed A. Shirazi-Adl and Hafedh Marouane*
16:45	166	**Heiko Stark**	**A THREE-DIMENSIONAL MODEL OF THE DOG'S LOCOMOTOR SYSTEM** *Heiko Stark, Emanuel Andrada and Martin S. Fischer*
17:00	246	**Jorge Ambrósio**	**A FULLY INVERSE DYNAMICS APPROACH TO STUDY HOW THE MUSCLE DYNAMICS INFLUENCES THE SHOULDER MUSCLE FORCE SHARING PROBLEM** *Carlos Quental, Margarida Azevedo, Jorge Ambrósio, Sérgio Gonçalves and João Folgado*

ROOM *VA2*		CHAIR *Sam Evans; Martyn Nash*	PS 4.2 - Special Session **Soft Tissue Mechanics I**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:00	236	**Martyn Nash**	**IMPROVING DIAGNOSIS AND TREATMENT OF BREAST CANCER USING AUTOMATED BIOMECHANICS** *Thiranja Babarenda Gamage, Duane Malcolm, Anthony Doyle, Poul Nielsen and Martyn Nash*
16:15	140	**Pierre-Yves Rohan**	**WHAT IS THE INFLUENCE OF USING GENERIC MATERIAL PROPERTIES ON THE ESTIMATION OF THE PELVIS SAGGING WHEN SITTING FROM A FINITE ELEMENT MODEL OF THE BUTTOCK REGION?** *Pierre-Yves Rohan, Aurélien Macron, Jennifer Doridam, Alexandre Verney and Hélène Pillet*
16:30	243	**Paris Vakiel**	**NOVEL APPROACH TO MEASURING STRESSES ON THE KNEE CARTILAGE USING FIBER-OPTIC TECHNOLOGY** *Paris Vakiel, Christopher Dennison and Nigel Shrive*
16:45	220	**Dulce Oliveira**	**THE USE OF EPISIOTOMY DURING A MALPOSITION CHILDBIRTH AND ITS EFFECT ON THE PELVIC FLOOR MUSCLES** *Dulce Oliveira, Marco Parente, Begoña Calvo, Teresa Mascarenhas and Renato Natal Jorge*
17:00	199	**Maria Vila Pouca**	**ON THE ANISOTROPIC VISCO-HYPERELASTIC MODELLING OF THE PELVIC FLOOR MUSCLES DURING CHILDBIRTH** *Maria Vila Pouca, João Ferreira, Dulce Oliveira, Marco Parente and Renato Natal Jorge*
17:15	40	**S. Jamaleddin Mousavi**	**A FINITE ELEMENT IMPLEMENTATION OF GROWTH AND REMODELING BASED ON THE HOMEGENIZED CONSTRAINED MIXTURE MODEL** *S. Jamaleddin Mousavi and Stéphane Avril*
17:30	141	**Samuel Wall**	**ADJOINT BASED DATA ASSIMILATION FOR QUANTIFYING MECHANICAL PROPERTIES IN CLINICAL CARDIAC MECHANICS** *Samuel Wall, Henrik Finsberg, Hans Henrik Odland, Stian Ross and Lik Chuan Lee*

ROOM 02.1		CHAIR *Dominique Piolleti*	PS 4.3 Modeling-Aided Design of Medical Devices
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:00	129	**Claire C. Villette**	**HETEROGENEOUS DESIGN OPTIMISATION OF TISSUE ENGINEERING SCAFFOLDS: IN-VITRO ASSESSMENT OF A DIGITAL DESIGN FRAMEWORK** *Claire C. Villette, Miguel Castilho, Jos Malda and Andrew T. M. Phillips*
16:15	26	**Maria Norberta de Pinho**	**OXYGEN MASS TRANSFER IN OXYGEN/MEMBRANE/WATER FLOW SYSTEMS** *Cintia Moreira, Monica Faria and Maria Norberta de Pinho*
16:30	196	**Soraya Mareishi**	**DESIGN OPTIMIZATION OF DENTAL IMPLANT USING ADDITIVELY MANUFACTURED LATTICE MATERIALS** *Soraya Mareishi, Fred Afagh and Mostafa Elsayed*
16:45	198	**Maria Augusta Neto**	**NUMERICAL ASSESSMENT OF KNEE ARTHRODESIS USING EXTERNAL FIXATION** *Maria Augusta Neto, Miguel Samarra, António Garruço, Luis Manuel Roseiro and Ana Martins Amaro*
17:00	206	**Leiming Gao**	**EFFECT OF BODY-MASS-INDEX OF VIRTUAL PATIENTS ON THE WEAR OF LUBRICATED HIP JOINTS IN GAIT CYCLES - A NUMERICAL STUDY** *Leiming Gao, David Lunn, Anthony Redmond, Nilanjan Chakladar, Enrico De Pieri, Stephen Ferguson and Richard Hall*
17:15	219	**Michael Harasek**	**SIMULATION OF AN INTRACORPOREAL MEMBRANE CATHETER FOR CO2 REDUCTION IN BLOOD** *Michael Harasek, Margit Gföhler, Benjamin Lukitsch, Christoph Janeczek, Alen Karabegovic, Florentine Huber-Dangl, Claus Krenn and Roman Ullrich*
17:30	214	**Luís Quinto**	**DESIGN OF A PASSIVE EXOSKELETON TO SUPPORT SIT-TO-STAND MOVEMENT: A 2D MODEL FOR THE DYNAMIC ANALYSIS OF MOTION** *Luís Quinto, Sérgio B. Gonçalves and Miguel Tavares Da Silva*

ROOM 02.2		CHAIR *Philippe Büchler*	PS 4.4 Computer-aided surgery/Machine learning and CMBBE
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:00	60	**Armin Dietz**	**CONTACTLESS HAND IDENTIFICATION USING MACHINE LEARNING** *Armin Dietz, Joachim Hienzsch and Eduard Reithmeier*
16:15	118	**Mohammad Mehrian**	**MULTI-OBJECTIVE OPTIMIZATION OF COST-EFFICIENT NEOTISSUE GROWTH INSIDE 3D SCAFFOLDS USING EVOLUTIONARY ALGORITHMS** *Mohammad Mehrian, Simon Olofsson, Ruth Misener and Liesbet Geris*
16:30	229	**Mazen Alhrishy**	**A MACHINE LEARNING FRAMEWORK FOR CONTEXT SPECIFIC COLLIMATION AND WORKFLOW PHASE DETECTION** *Mazen Alhrishy, Daniel Toth, Srinivas Ananth Narayan, Tanja Kurzendorfer, Tim Horz, Peter Mountney and Kawal Rhode*
16:45	31	**Diego Alastruey-López**	**COMPUTER-AIDED SURGERY FOR THE MEDIAL PATELLOFEMORAL LIGAMENT RECONSTRUCTION: A PARAMETRIC FINITE ELEMENT MODEL** *Diego Alastruey-López, Vicente Sanchis-Alfonso, Angel Alberich-Bayarri and María Angeles Pérez*
17:00	100	**Oskar Truffer**	**OPTIMIZATION OF SURGICAL PARAMETERS BASED ON PATIENT-SPECIFIC MODELS – APPLICATION TO CATARACT SURGERY** *Oskar Truffer, Harald Studer, Elena Businaro and Philippe Büchler*
17:15	241	**Pedro Morais**	**DEVELOPMENT OF AN ATRIAL PHANTOM MODEL FOR PLANNING AND TRAINING OF INTER-ATRIAL INTERVENTIONS** *Pedro Morais, João L. Vilaça, Sandro Queirós, Fernando Veloso, Jan D'Hooge and João Manuel R. S. Tavares*

Parallel Session 5

Wednesday, **28th March**, 9:00-10:30

ROOM *VA1*	WORKSHOP *SYNOPSYS*	**Image-Based Modelling with Simpleware for Biomechanics** *Synopsys*

ROOM *VA2*		CHAIR *Sam Evans, Martyn Nash*	PS 5.1 - Special Session **Soft Tissue Mechanics II**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	30	**Joseph Brunet**	**CHARACTERIZATION AND MODELLING OF RUPTURE IN OF ARTERIAL MEDIAL TISSUE UNDER TENSION FROM IN SITU EXPERIMENTS WITH X-RAY TOMOGRAPHY** *Joseph Brunet, Baptiste Pierrat, Eric Maire, Jérôme Adrien and Pierre Badel*
9:15	147	**Lauranne Maes**	**DETERMINING MATERIAL PROPERTIES OF ARTERIAL TISSUE IN ACCORDANCE TO CONSTRAINED MIXTURE MODELING** *Lauranne Maes, Fehervary Heleen, Julie Vastmans, D. Farotto, Jamalledin Mousavi, Jos Vander Sloten, Stéphane Avril and Nele Famaey*
9:30	201	**Jibbe Soetens**	**CONSTITUTIVE MODELING OF HUMAN SKIN** *Jibbe Soetens, Gerrit Peters and Cees Oomens*
9:45	208	**Thomas Fastl**	**PERSONALIZED COMPUTATIONAL MODELING OF LEFT ATRIAL ELECTROMECHANICS** *Thomas Fastl, Christoph Augustin, John Whitaker, Ronak Rajani, Mark O'Neill, Gernot Plank, Martin Bishop and Steven Niederer*
10:00	29	**Solmaz Farzaneh**	**IDENTIFICATION OF REGIONAL STIFFNESS DISTRIBUTION ACROSS ASCENDING THORACIC AORTIC ANEURYSMS USING CT IMAGES: AN INVERSE METHOD** *Solmaz Farzaneh, Olfa Trabelsi and Stéphane Avril*
10:15	221	**Elisabete Silva**	**BIOMECHANICAL PROPERTIES OF THE PUBOVISCERALIS MUSCLE OF ASYMPTOMATIC, INCONTINENT AND PROLAPSED WOMEN USING AN INVERSE FINITE ELEMENT ANALYSIS** *Elisabete Silva, Marco Parente, Teresa Mascarenhas and Renato Natal Jorge*

ROOM *02.2*		CHAIR *Estevam Las Casas*	PS 5.2 **Hard tissue biomechanics/Mechanobiology**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	154	**Martin Pietsch**	**SIMULATION OF TISSUE FORMATION DURING FRACTURE HEALING USING INTERFACE CAPTURING TECHNIQUES** *Martin Pietsch, Frank Niemeyer, Karsten Urban, Anita Ignatius and Ulrich Simon*
9:15	43	**Nikolas Knowles**	**DEVELOPMENT OF A VALIDATED GLENOID TRABECULAR DENSITY-MODULUS RELATIONSHIP** *Nikolas Knowles, G Daniel G Langohr, Mohammadreza Faieghi, Andrew Nelson and Louis Ferreira*
9:30	63	**Andrada Pica**	**PREDICTION OF OSTEOPHYTES RELEVANCE IN HUMAN OSTEOARTHRITIC FEMUR HEAD FROM LOAD PATTERN REARRANGEMENT SIMULATIONS: AN INTEGRATED FEM STUDY** *Fabiano Bini, Andrada Pica, Andrea Marinozzi and Franco Marinozzi*
9:45	192	**Manuel Pinheiro**	**INVESTIGATIONS ON THE BIOMECHANICS OF THE LEGG-CALVÉ-PERTHES DISEASE** *Manuel Pinheiro, Catherine Dobson, Daniel Perryand and Michael Fagan*
10:00	76	**Ricardo Duarte**	**TRUNK BEHAVIOR CHARACTERIZATION IN PATIENTS WITH CAMPTOCORMIA THROUGH 3D VIDEO ANALYSIS** *Ricardo Duarte, Mathieu De Sèze, António Ramos and Michel Mesnard*

ROOM *MA*		CHAIR *Cristian Linte*	PS 5.3 Biomedical Image Processing II
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	133	**Daniel Abler**	**EVALUATING THE EFFECT OF TISSUE ANISOTROPY IN BRAIN TUMOR GROWTH USING A MECHANICALLY-COUPLED REACTION-DIFFUSION MODEL** *Daniel Abler, Russell Rockne and Philippe Büchler*
9:15	202	**Diogo Almeida**	**HEXAHEDRAL FINITE ELEMENT MESH GENERATION FOR TOTAL HIP ARTHROPLASTY ANALYSIS** *Diogo F. Almeida, Rui B. Ruben, João Folgado, Paulo R. Fernandes, Benedict Verhegghe and Matthieu De Beule*
9:30	217	**Jonathan Kusins**	**DEVELOPMENT AND CROSS-VALIDATION OF A CT-COMPATIBLE LOADING DEVICE FOR MECHANICAL TESTING OF TRABECULAR BONE SPECIMENS** *Jonathan Kusins, Nikolas Knowles, Mohammadreza Faieghi, Andrew Nelson and Louis Ferreira*
9:45	93	**Patricia Lopes**	**PARTICLE SYSTEMS FOR PATIENT-SPECIFIC MODELING OF THE MITRAL VALVE** *Patricia Lopes, Roel Wirix-Speetjens, Johan Bosmans and Jos Vander Sloten*
10:00	111	**Xavier Roothaer**	**A QUANTITATIVE METHOD FOR THE THREE-DIMENSIONAL ASSESSMENT OF HUMAN CORTICAL LONG-BONE ARCHITECTURE BASED ON µ-CT IMAGES** *Xavier Roothaer, Rémi Delille, Hervé Morvan, Bruno Bennani, Eric Markiewicz and Christian Fontaine*
10:15	234	**Vânia Araújo**	**A NEW COMPUTATIONAL SOLUTION TO COMPUTE THE UPTAKE INDEX FROM 99MTC-MDP BONE SCINTIGRAPHY IMAGES** *Vânia Araújo, Diogo Faria and João Manuel R. S. Tavares*

ROOM *02.1*		CHAIR *Guillaume Haiat*	PS 5.4 Implants/orthotics/prosthetics/devices II
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	21	**Antoine Tijou**	**MONITORING OF THE FEMORAL STEM INSERTION IN BONE MIMICKING PHANTOMS BY IMPACT MEASUREMENTS** *Antoine Tijou, Gisueppe Rosi and Guillaume Haiat*
9:15	204	**Michael Indermaur**	**BONE COMPACTION FOLLOWING INSERTION AND CYCLIC LOADING OF DENTAL IMPLANTS** *Michael Indermaur, Marzieh Ovesy, Benjamin Voumard, Ainara Irastorza Landa, Peter Heuberger and Philippe Zysset*
9:30	200	**Jakub Chamrad**	**A MULTI-SCALE COMPUTATIONAL MODELING OF CRANIAL IMPLANTS: A COMPARATIVE STUDY** *Jakub Chamrad, Petr Marcián and Libor Borák*
9:45	160	**Henrique Almeida**	**ADVANCED DESIGN METHODOLOGIES IN THE DEVELOPMENT OF HAND-SPLINTS** *Ana Filipa Costa, Henrique Almeida and Carina Ramos*
10:00	148	**Aroj Bhattarai**	**FEMALE ANTERIOR PROLAPSE REPAIR WITH TRANSOBTURATOR MESH IMPLANTS: A FINITE ELEMENT APPROACH** *Aroj Bhattarai, Soroor Tafazoli and Manfred Staat*
10:15	193	**Abdulsalam A. Al-Tamimi**	**REDESIGN AND FABRICATION OF NOVEL METALLIC BONE FIXATION IMPLANT THROUGH TOPOLOGY OPTIMIZATION AND ADDITIVE MANUFACTURING** *Abdulsalam A. Al-Tamimi, Paulo Fernandes, Chris Peach and Paulo Bartolo*

Coffee Break

Plenary Lectures

Wednesday, **28th March**, 11:00-12:30

ROOM *MA*		CHAIR *John Middleton*	**Plenary IV**
Time	**ID**	**PLENARY SPEAKER**	**TITLE**
11:00	248	Daniela Iacoviello	**PHYSIOLOGICAL CYBERNETICS: METHODS AND APPLICATIONS** *Daniela Iacoviello*
11:30	258	Christoph Bourauel	**HIGH PERFORMANCE POLYMERS IN DENTISTRY - BIOMECHANICAL AND CLINICAL ASPECTS** *Christoph Bourauel, Ludger Keilig, Istabrak Hasan, Tobias Klur, Anne Kartzenbach and Helmut Stark*
12:00	255	Estevam de las Casas	**DESIGNING INTRAMEDULLAR POSTS FOR VETERINARY APPLICATIONS** *Estevam B. Las Casas, Leopoldo Paolucci, Rafael Faleiros, Sergio Rocha Jr., Paulo Fernandes, João Folgado, Luciano Rodrigues and Luciana Gomides*
12:30	253	Martyn Nash	**BIOMECHANICAL MECHANISMS OF HEART FAILURE** *Martyn Nash*

Lunch

Tour & Conference Dinner

Parallel Session 6

Thursday, **29th March**, 9:00-10:30

ROOM *VA1*	WORKSHOP *LLJ*	**LLJ - LifeLongJoints - Assessments in Orthopaedics** *LLJ - LifeLongJoints*

ROOM *MA*		CHAIR *Sidney Fels; John Lloyd*	PS 6.1 - Special Session **Combining Multibody and Finite Element Models for Anatomical Simulation**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	225	**John Lloyd**	**NEW TECHNIQUES FOR COMBINED FEM-MULTIBODY ANATOMICAL SIMULATION** *John Lloyd, Antonio Sanchez and Sidney Fels*
9:15	51	**Benedikt Sagl**	**DEVELOPMENT OF A COMBINED RIGID BODY - FINITE ELEMENT MODEL FOR THE INVESTIGATION OF TEMPOROMANDIBULAR JOINT LOADS** *Benedikt Sagl, Eva Piehslinger, Michael Kundi, Martina Schmid-Schwap and Ian Stavness*
9:30	149	**Fabien Péan**	**A MUSCULOSKELETAL MODEL OF THE SHOULDER COMBINING MULTIBODY DYNAMICS AND FEM USING B-SPLINE ELEMENTS** *Fabien Péan, Philipp Fürnstahl and Orcun Goksel*
9:45	14	**Kilian Kappert**	**SIMULATION OF SURGERY AND RADIOTHERAPY USING FINITE ELEMENT MODELS OF THE TONGUE** *Kilian Kappert, Simone van Dijk, Maarten van Alphen, Ludwig Smeele, Alfons Balm and Ferdinand van der Heijden*
10:00	144	**Siamak Niroomandi**	**A PATIENT-SPECIFIC 3D MUSCULO-SKELETAL FINITE ELEMENT MODEL OF ANKLE ARTHRODESIS** *Siamak Niroomandi, Yohan Payan, Antoine Perrier and Marek Bucki*
10:15	89	**Ian Stavness**	**FINITE-ELEMENT MODEL SIMULATION USING DEEP LEARNING** *Francois Roewer-Despres, Najeeb Khan and Ian Stavness*

ROOM *02.2*		CHAIR *Cees Oomens*	PS 6.2 **Multiscale modelling in biomechanics**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	84	**Nithin Babu Rajendra Kurup**	**PRELIMINARY ANALYSIS OF KINEMATICS AND MUSCLE ACTIVITY ON A NOVEL HANDLE BASED WHEELCHAIR PROPULSION MECHANISM** *Nithin Babu Rajendra Kurup, Markus Puchinger and Margit Gföhler*
9:15	101	**André Castro**	**METHODS FOR GENERATING PERSONALISED INFANT FEMUR MODELS COMBINING PAIRED CT AND MRI SCANS** *André Castro, Zainab Altai, Amaka Offiah, Susan Shelmerdine, Owen Arthurs, Xinshan Li and Damien Lacroix*
9:30	134	**Uziel Silva**	**EFFECTIVE ELECTROELASTIC MODULI OF 3-1 POROUS PIEZOELECTRIC SOLIDS OF CLASS 6** *Adair Aguiar, Julián Bravo-Castillero and Uziel Silva*
9:45	189	**Eleanor Doman**	**NEW MULTISCALE BIOMECHANICAL MODELS FOR PERIPHERAL NERVE TISSUE** *Eleanor Doman, James B. Phillips, Rebecca J. Shipley and Nicholas Ovenden*
10:00	228	**Sebastian Wroński**	**AUTOMATED PROCESSING OF MICRO-CT SCANS AND MICRO-FE RESULTS FOR COMPUTER SIMULATIONS OF MECHANICAL PROPERTIES OF BONE TISSUE** *Jakub Kaminski, Sebastian Wroński and Jacek Tarasiuk*
10:15	79	**Margit Gföhler**	**A NOVEL DEVICE FOR MANUAL WHEELCHAIR PROPULSION - FIRST EXPERIMENTAL RESULTS** *Markus Puchinger, Nithin B. Kurup and Margit Gföhler*

ROOM *VA2*		CHAIR *Marc Thiriet*	PS 6.3 **Hemodynamics and CFD applications**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	3	**Kamran Hassani**	**THE EFFECTS OF DIFFERENT MATERIAL PROPERTIES ON THE HEMODYNAMICS OF HUMAN FETAL UMBILICAL VEIN/DUCTUS VENOSUS** *Kamran Hassani and Taraneh Rezaee*
9:15	6	**Aikaterini Stamou**	**NUMERICAL MODELLING OF STENOSIS DEVELOPMENT IN THE CAROTID ARTERY** *Aikaterini Stamou and James Buick*
9:30	34	**Fei Xu**	**NUMERICAL SIMULATION AND ANALYSIS OF THE FLOW PATTERNS IN AN AORTIC ROOT MODEL THROUGH A BI-LEAFLET MECHANICAL VALVE** *Fei Xu, Giorgio Fagioli, Saeid Khalafvand, Frank Gijsen and Sasa Kenjeres*
9:45	132	**Mahsa Jahed**	**COMPARATIVE BLOOD FLOW VELOCITY INVESTIGATIONS IN THE PATIENT-SPECIFIC CIRCLE OF WILLIS WITH ANEURYSM: TRANSCRANIAL DOPPLER, COMPUTATIONAL FLUID DYNAMIC** *Mahsa Jahed, Farzan Ghalichi and Mehdi Farhoudi*
10:00	262	**Roel Meiburg**	**UNCERTAINTY IN MODEL-BASED TREATMENT DECISION SUPPORT: APPLIED TO AORTIC VALVE STENOSIS** *Roel Meiburg, Marcel C.M. Rutten and Frans N. van de Vosse*
10:15	182	**Gabor Janiga**	**INNOVATIVE FLOW VISUALIZATION OF 4D FLOWS IN INTRACRANIAL ANEURYSMS** *Gabor Janiga*

ROOM *02.1*		CHAIR *Jos Vander Sloten*	PS 6.4 **Tissue engineering and Bioprinting**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
9:00	48	**André Girão**	**DESIGN AND FABRICATION OF BIOMIMETIC 3D ANISOTROPIC FIBROUS SCAFFOLDS FOR CARTILAGE TISSUE ENGINEERING APPLICATIONS** *André F. Girão, Ângela Semitela, Gonçalo Ramalho, Paula A.A.P Marques and António Completo*
9:15	81	**Ângela Semitela**	**CELLULAR RESPONSE TO ANISOTROPIC FIBROUS/POROUS ELECTROSPUN SCAFFOLDS FOR CARTILAGE TISSUE ENGINEERING** *Ângela Semitela, André F. Girão, Gonçalo Ramalho, António Completo and Paula A.A.P. Marques*
9:30	119	**Liesbet Geris**	**COMPUTATIONAL MODELLING OF HUMAN MESENCHYMAL STEM CELL PROLIFERATION AND EXTRA CELLULAR MATRIX PRODUCTION IN 3D POROUS SCAFFOLDS IN A PERFUSION BIOREACTOR** *Mohammad Mehrian, Ioannis Papantoniou, Toon Lambrechts and Liesbet Geris*
9:45	158	**Greet Kerckhofs**	**TOWARDS ENABLING OF ONLINE PERFUSED TE CONSTRUCT VISUALIZATION THROUGH THE DEVELOPMENT OF A MONITORED AND CONTROLLABLE BENCHTOP BIOREACTOR** *Sébastien de Bournonville, Toon Lambrechts, Ioannis Papantoniou, Johan Vanhulst, Greet Kerckhofs and Liesbet Geris*
10:00	194	**Rachel Coy**	**A PARAMETERISED CELL-SOLUTE MODEL TO AID PERIPHERAL NERVE CONSTRUCT DESIGN** *Rachel Coy, Georgina Kennedy, Caitriona O'Rourke, Paul Kingham, James Phillips and Rebecca Shipley*
10:15	257	**Paula Pascoal-Faria**	**STIMULI OPTIMIZATION FOR BIOSCAFFOLDS PLACED AT A BIOREACTOR FOR IN VITRO TISSUE ENGINEERING APPLICATIONS** *Paula Pascoal-Faria, Pedro Castelo Ferreira and Nuno Alves*

Coffee Break

Plenary Lectures

Thursday, **29th March**, 11:00-12:30

ROOM *MA*		CHAIR *João Tavares*	**Plenary V**
Time	**ID**	**PLENARY SPEAKER**	**TITLE**
11:00	249	**Cees Oomens**	**PREDICTING GROWTH AND REMODELING OF ENGINEERED CARDIOVASCULAR TISSUES** *Sandra Loerakker and Cees Oomens*
11:30	259	**Jos Vander Sloten**	**ADDED VALUE OF CASE-SPECIFIC, COMPUTER AIDED BIOMECHANICAL ANALYSIS** *Pim Pellikaan, Roel Wirix-Speetjens, Ilse Jonkers, Harry van Lenthe and Jos Vander Sloten*
12:00	260	**Wafa Skalli**	**IN VIVO BARYCENTREMETRY FOR SUBJECT SPECIFIC MUSCULO-SKELETAL MODELLING** *Wafa Skalli and Laurent Gajny*

Lunch

Parallel Session 7

Thursday, **29th March**, 14:00-16:00

ROOM *VA1*	WORKSHOP *ARTISYNTH*	**Combined Multibody and Finite Element Simulation Using ArtiSynth** *Sidney Fels; John Lloyd*

ROOM *MA*		CHAIR *Michael Sacks*	**PS 7.1 Cardiovascular biomechanics**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
14:00	13	**Kamil Özden**	**NUMERICAL INVESTIGATION OF WALL PRESSURE FLUCTUATIONS DOWNSTREAM OF IDEAL AND REALISTIC STENOSED VESSEL MODELS** *Kamil Özden, Cüneyt Sert and Yiğit Yazıcıoğlu*
14:15	75	**Inês Gomes**	**NUMERICAL SIMULATION OF THE DEPLOYMENT PROCESS OF A NEW STENT PRODUCED BY ULTRASOUND-MICROCASTING: THE ROLE OF THE BALLOON'S CONSTITUTIVE MODELLING** *Inês Gomes, Hélder Puga and Luís Alves*
14:30	113	**Can Gökgöl**	**THE EFFECTS OF LEG FLEXION ON THE HEMODYNAMIC AND STRUCTURAL BEHAVIORS OF THE FEMORO-POPLITEAL ARTERIAL TRACT** *Can Gökgöl, Samuel Knobel, Nicolas Diehm and Philippe Büchler*
14:45	150	**Tim Meyer**	**VIDEO-OPTICAL ANALYSIS OF ENGINEERED HUMAN MYOCARDIUM IN A 48 WELL FORMAT** *Tim Meyer, Ralf Blendowske and Wolfram-Hubertus Zimmermann*
15:00	159	**Anastasia Nasopoulou**	**MYOCARDIAL MATERIAL PARAMETER ESTIMATION FROM 2D IMAGING DATA** *Anastasia Nasopoulou, David Nordsletten, Steven Niederer and Pablo Lamata*
15:15	223	**Daniela Valdez-Jasso**	**A TWO-FAMILY FIBER MODEL OF PULMONARY ARTERIES** *Erica Pursell and Daniela Valdez-Jasso*
15:30	91	**Maciej Micker**	**PHYSICAL FOUNDATIONS FOR THE SELECTION OF DIAGNOSTIC PARAMETERS OF ATHEROSCLEROTIC PLAQUE GROWTH** *Maciej Micker, Michał Ciałkowski, Marcin Warot, Andrzej Frąckowiak, Paweł Chęciński and Natalia Lewandowska*
15:45	247	**Ziemowit Ostrowski**	**NUMERICAL MODELING OF THE BLOOD FLOW IN RIGHT CORONARY ARTERY USING EULER-EULER MULTIPHASE APPROACH** *Maria Gracka, Bartlomiej Melka and Ziemowit Ostrowski*

ROOM *VA2*		CHAIR *Richard M. Hall; Anthony Redmond*	PS 7.2 - Special Session **Functional Performance of Joint Arthroplasty**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
14:00	103	**Charlotte Skjöldebrand**	**COMPOSITIONAL DEPENDENCE OF HARDNESS AND MODULUS OF SINFEC COATINGS** *Charlotte Skjöldebrand, Håkan Engqvist and Cecilia Persson*
14:15	109	**Luimar Correa Filho**	**WEAR RESISTANCE OF SILICON NITRIDE COATINGS IN A HARD-ON-SOFT CONTACT** *Luimar Correa Filho, Alejandro López, Susann Schmidt, Hans Högberg, Håkan Engqvist and Cecilia Persson*
14:30	120	**David Lunn**	**CONTACT SURFACE PATHWAYS IN TOTAL HIP REPLACEMENT PATIENTS STRATFIED BY GENDER** *David Lunn, Graham Chapman and Anthony Redmond*
14:45	127	**Anthony Redmond**	**JOINT CONTACT FORCES IN HIGH AND LOW FUNCTIONING TOTAL HIP REPLACEMENT PATIENTS** *David Lunn, Kasper Rasmussen, Enrico De Pieri, Morten Lund, Graham Chapman, Stephen Ferguson and Anthony Redmond*
15:00	61	**Adrian Falkenberg**	**COMPARISON OF MICROMOTIONS IN HEAD-STEM AND NECK-STEM TAPER JUNCTIONS** *Adrian Falkenberg, Michael M Morlock and Gerd Huber*
15:15	126	**Cecilia Persson**	**EMPLOYING THE FISH EMBRYO TOXICITY (FET) TEST TO ASSESS WEAR DEBRIS FROM BIOMATERIAL CANDIDATES DESIGNATED FOR HIP REPLACEMENT PROSTHESIS** *Theresa Rothenbücher, Gry Hulsart Billström, Luimar Correa Filho, Håkan Engqvist and Cecilia Persson*
15:30	16	**Rob Hewson**	**PREDICTION OF WEAR AND EVOLUTION OF ROUGHNESS IN TOTAL HIP REPLACEMENTS** *Nilanjan Das Chakladar, Leiming Gao, Richard Hall and Rob Hewson*

ROOM *02.1*		CHAIR *Yongping Zheng*	PS 7.3 **Biomedical Image Analysis**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
14:00	41	**Alberto Arturo Vergani**	**RESTING STATE FMRI FUNCTIONAL CONNECTIVITY ANALYSIS USING SOFT COMPETITIVE LEARNING ALGORITHMS** *Alberto Arturo Vergani, Elisabetta Binaghi, Samuele Martinelli and Sabina Strocchi*
14:15	50	**Fabio D'Isidoro**	**2D/3D REGISTRATION OF THE PROSTHETIC HIP FROM X-RAY IMAGES: A METHOD FOR RETRIEVAL OF ROTATION OF THE ACETABULAR CUP AROUND ITS SYMMETRY AXIS** *Fabio D'Isidoro and Stephen J. Ferguson*
14:30	106	**Susanne Lewin**	**QUANTIFICATION OF RADIOLOGICAL CHANGES AROUND DENTAL IMPLANTS: A CBCT IMAGE ANALYSIS WORKFLOW** *Susanne Lewin, Christopher Riben, Andreas Thor and Caroline Öhman-Mägi*
14:45	128	**Philippe Büchler**	**BONE SEGMENTATION USING STATISTICAL SHAPE MODEL AND LOCAL TEMPLATE MATCHING** *Elham Taghizadeh, Alexandre Terrier, Fabio Becce, Alain Farron and Philippe Büchler*
15:00	138	**Amir H. Abdi**	**FIDUCIAL-BASED REGISTRATION OF 3D DENTAL MODELS TO MAGNETIC RESONANCE IMAGES** *Amir H. Abdi, Alan G. Hannam, David Tobias and Sidney Fels*
15:15	210	**François Girinon**	**QUASI-AUTOMATED 3D RECONSTRUCTION OF THE LOWER LIMB COMBINING STATISTICAL SHAPE MODELING AND IMAGE PROCESSING FROM BI-PLANAR X-RAYS** *François Girinon, Laurent Gajny, Shahin Ebrahimi, Philippe Rouch and Wafa Skalli*
15:30	152	**Jessica C. Delmoral**	**AUTOMATIC ATLAS-BASED BRAIN REGIONAL 18F-FLUORODEOXYGLUCOSE (FDG) UPTAKE QUANTIFICATION** *Jessica C. Delmoral, João Manuel R. S. Tavares, Diogo Faria and Durval C. Costa*

Coffee Break

Parallel Session 8

Thursday, **29th March**, 16:30-17:45

ROOM *MA*		CHAIR *W. Skalli; C. Vergari; L. Gajny*	PS 8.1 - Special Session **Non-invasive imaging of scoliosis**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:30	185	Saša Ćuković	**NON-IONIZING THREE-DIMENSIONAL ESTIMATION OF AXIAL VERTEBRAL ROTATIONS IN ADOLESCENTS SUFFERING FROM IDIOPATHIC SCOLIOSIS** *Saša Ćuković, William Taylor, Michele Fiorentino, Vanja Luković, Goran Devedžić, S. Karupppasamy and Silvio Lorenzetti*
16:45	10	Yongping Zheng	**SCOLIOSCAN: ASSESSMENT OF 3D SPINAL DEFORMITY USING ULTRASOUND IMAGING** *Yongping Zheng*
17:00	12	Claudio Vergari	**SHEAR WAVE ELASTOGRAPHY TO CHARACTERIZE SCOLIOTIC INTERVERTEBRAL DISC** *Claudio Vergari, Tristan Langlais, Raphaël Pietton, Jean Dubousset, Wafa Skalli and Raphaël Vialle*
17:15	122	Laurent Gajny	**3D RECONSTRUCTION OF ADOLESCENT SCOLIOTIC TRUNK SHAPE FROM BIPLANAR X-RAYS: A FEASIBILITY STUDY** *Laurent Gajny, Léopold Robichon, Thibault Hernandez, Raphaël Vialle and Wafa Skalli*

ROOM *VA2*		CHAIR *Miguel Silva*	PS 8.2 **Human movement and rehabilitation**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:30	65	Gergana Nikolova	**FEMALE HUMAN BODY MODELLING FOR STUDY OF MASS - INERTIAL CHARACTERISTICS** *Gergana Nikolova, Vladimir Kotev and Daniel Dantchev*
16:45	83	Tiago de Melo Malaquias	**PLANTAR PRESSURE BASED ESTIMATES OF FOOT KINEMATICS DURING GAIT - A LEAST SQUARES OPTIMIZATION APPROACH** *Tiago de Melo Malaquias, Wouter Aerts, Friedl De Groote, Ilse Jonkers and Jos Vander Sloten*
17:00	123	Robin Layton	**A NOVEL METHOD TO INVESTIGATE CROSS-SHEAR MOTION IN A HIP REPLACEMENT** *Robin Layton, Todd Stewart and Neil Messenger*
17:15	145	Carlos Rodrigues	**SOFTWARE TOOL FOR SIGNIFICANT ANALYSIS OF COMPLEMENTARY DOMAINS AT HUMAN GAIT** *Carlos Rodrigues, Miguel Correia, João Abrantes, Marco Aurélio Benedetti Rodrigues and Jurandir Nadal*

ROOM *02.1*		CHAIR *Jorge Belinha*	PS 8.3 **Meshless methods in biomechanics**
TIME	**ID**	**PRESENTING AUTHOR**	**TITLE**
16:30	195	Jorge Belinha	**BIOMECHANICAL APPLICATIONS USING ADVANCED DISCRETIZATION TECHNIQUES** *Jorge Belinha, Lúcia Dinis and Renato Natal Jorge*
16:45	72	Ana Guerra	**NUMERICAL SIMULATION OF ANGIOGENESIS STIMULATION DURING WOUND HEALING: A PRELIMINARY STUDY** *Ana Guerra, Jorge Belinha and Renato Natal Jorge*
17:00	97	Joana Gomes	**NUMERICAL ANALYSIS OF CHITOSAN GUIDE TUBES USING MESHLESS METHODS AND NEW PHENOMENOLOGICAL LAWS** *Joana Gomes, Jorge Belinha and Renato Natal Jorge*
17:15	99	Madalena M. A. Peyroteo	**GROWTH AND REMODELING MECHANISMS – BONE AND CARDIAC TISSUES** *Madalena M. A. Peyroteo, Jorge Belinha, Joaquim A.C.F. Leite Moreira and Renato Natal Jorge*
17:30	77	Marco Marques	**DEVELOPMENT OF A HOMOGENIZATION TECHNIQUE FOR TRABECULAR BONE USING THE FABRIC TENSOR CONCEPT** *Marco Marques, Jorge Belinha, António Fonseca Oliveira, M.C. Manzanares Céspedes and Renato Natal Jorge*

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