

# Scientific Meeting of the Austrian Chapter of ESB

## November 30, 2020

virtual via Zoom

Register in advance at

[https://tuwien.zoom.us/webinar/register/WN\\_3HR2DuWhRsmN7gu9Z\\_nGLQ](https://tuwien.zoom.us/webinar/register/WN_3HR2DuWhRsmN7gu9Z_nGLQ)

09:30 Welcome Address  
**Christian Hellmich** (President Austrian Chapter ESB)

### Keynote Lecture

Chair: Christian Hellmich (TU Wien)

09:40 *Biomechanics and mechanobiology of aneurysm progression: the journey towards better healthcare*  
**Stéphane Avril** (École Mines Saint-Etienne, France / TU Wien)

### Recent developments

Chair: Peter Augat (PMU Salzburg)

10:10 *Interaction between the heart and a left ventricular assist device - Effects on the flow field and potential pathophysiological consequences*  
**Heinrich Schima** (MedUni Wien)

10:25 *Mathematical modeling of COVID-19 fatality trends*  
**Niketa Ukaj** (TU Wien)

10:40 *ErgoTrack – Biomechanics in ergonomics*  
**Hannes Wackerle** (PMU Salzburg)

10:55 Break

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## Molecules, cells, and fibrils

Chair: Dieter Pahr (TU Wien, KL Krems)

- 11:15 *Cell biology of 3D printing of chaetae*  
**Kyojiro Ikeda** (Uni Wien)
- 11:30 *Effect of glycation on surface charge and indentation stiffness of individual collagen fibrils*  
**Manuel Rufin** (TU Wien)
- 11:45 *Assessment of mechanical parameters in collagen fibrils through a nonlinear rheological model*  
**Martin Handelshauer** (TU Wien)
- 12:00 *Novel instrument for rapid and force controlled tensile testing of single collagen fibrils*  
**Mathis Nalbach** (TU Wien)
- 12:15 *A new approach to the mechanics of DNA*  
**Johannes Kalliauer** (TU Wien)
- 12:30 Lunch Break

## Bone simulations and clinical applications

Chair: Werner Schmölz (MedUni Innsbruck)

- 13:30 *Development and verification of a simulation model of the human thorax based on CT data and stiffness measurements*  
**Wolfgang Krach** (CAE Simulation & Solutions)
- 13:45 *Non-linear micro FE in bone biomechanics*  
**Dieter Pahr** (TU Wien)
- 14:00 *Cerclage augmented plate osteosynthesis enables immediate post-operative weight-bearing after distal tibia fractures*  
**Sabrina Sandriesser** (PMU Salzburg)
- 14:15 *Prediction of interfragmentary movement in fracture fixation constructs using a combination of finite element modeling and rigid body assumptions*  
**Mischa Mühlring** (PMU Salzburg)
- 14:30 *Does the intraoperative correction of lateral misplaced pedicle screws improve implant anchorage?*  
**Maximilian Sigloch** (MedUni Innsbruck)

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14:45 Break

## Bone experiments

Chair: Philipp Thurner (TU Wien)

15:15 *Thermal effects during bone preparation for- and insertion of osseointegrated transfemoral implants*

**Emir Benca** (MedUni Wien)

15:30 *Application of 3D free-hand ultrasound in clinical gait analysis to register anatomical landmarks at the pelvis*

**Brian Horsak** (FH St. Pölten)

15:45 *Viscosity identification in bone and soft tissue mechanics*

**Andreas Reisinger** (KL Krems)

16:00 *"Variances" and "in-variances" in hierarchical porosity and composition, across femoral tissues from cow, horse, ostrich, emu, pig, rabbit, and frog*

**Luis Zelaya** (TU Wien)

16:15 Discussion & Closing

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