

2022 Programme of the 4th International Conference on Trauma Surgery Technology

This year' focus topic: Mathematics in Medical Diagnostics

Date 23 April 2022, start time 1 pm (CEST)

Location:

Max-Planck Dioscuri Centre in Topological Data Analysis,
Polish Academy of Sciences,
Institute of Mathematics
Sniadeckich 8
Warsaw, Poland

Virtual log in details on zoom:

<https://us02web.zoom.us/j/3907697241?pwd=SmdlVCtGOXNnSnJXQ2VWU0V5c1NVQT09>

Meeting ID: 390 769 7241

Passcode: 3EqzkF

Instructions for speakers

We are looking forward to your talk. Please aim to speak no longer than 15 min.

Sessions overview

Opening session

Starting 1 pm

- **Dlotko, Pawel, Dioscuri Centre for Topological Data Analysis, Warszawa, Poland**
Welcome message, technical details and workshop structure
How to see multiple clinical parameters acting together?
- **Group photo 2022 on zoom (participation non mandatory)**

Session 1 – Topological data analysis, Chair: Bosbach, Wolfram A

Starting 1.30 pm

- **Senge, Jan, Department of Mathematics and Computer Science, University of Bremen, Germany**
Analysis of synchrotron images of human femoral heads and extraction of their topological characteristics
- **Hellmer, Niklas, Dioscuri Centre for Topological Data Analysis, Warszawa, Poland**
Metrics for persistence diagrams and modules and interactions of TDA with statistics
- **Gurnari, Davide, Dioscuri Centre for Topological Data Analysis, Warszawa, Poland**
Distributed computations of persistence curves and extensions of mapper-type algorithms

Coffee break 15 min

Session 2 – Non-TDA works, Chair: Dlotko, Pawel

Starting 2.45 pm

- **Tindall, Marcus J, Department of Mathematics and Statistics & Institute of Cardiovascular and Metabolic Research, University of Reading, UK**
Mathematical modelling of bacterial chemotactic systems – The Rhodobacter sphaeroides case example
- **Burfitt, Matthew, Department of Mathematics, University Aberdeen, UK**
A projective model for fast field cycling MRI images
- **Bosbach, Konstantin E, Medical Department, University of Freiburg, Germany**
Investigating in vivo Detectability of the Neurotransmitter GABA in Magnetic Resonance Spectroscopy with the Monte Carlo method

Coffee break 15 min

Session 3 – Medical applications, Chair: TBD

Starting 4.00 pm

- **Bosbach, Wolfram A, Department of Diagnostic, Interventional and Paediatric Radiology (DIPR), Inselspital, Bern University Hospital, University of Bern, Switzerland**
VBA simulations of hospital operations – case study on Covid-19 vaccine rollout schemes
- **Ramedani, Saied, Graduate School of Cellular and Biomedical Sciences, University of Bern, Switzerland**
Automated Evaluation of the Whole Body's Muscle-fat Composition by Machine Learning for Magnetic Resonance Images (MRI)
- **Haupt, Fabian, Department of Diagnostic, Interventional and Paediatric Radiology (DIPR), Inselspital, Bern University Hospital, University of Bern, Switzerland**
Educational presentation of state of the art imaging of congenital vascular malformations

Past events:

3rd (virtual) conference: Multifunctional trauma surgery implants

DFG grant BO 4961/6-1

17 Oct 2020

Proceedings DOI [/10.17863/CAM.60559](https://doi.org/10.17863/CAM.60559)

2nd conference: Vibration in oncological and antibacterial therapy

DFG grant BO 4961/3-1

11 - 13 Oct 2019

Proceedings DOI [/10.17863/CAM.45844](https://doi.org/10.17863/CAM.45844)

1st conference: Patient centred technology design in traumatology

DFG grant BO 4961/4-1

16 - 18 Nov 2018

Proceedings DOI [/10.17863/CAM.34582](https://doi.org/10.17863/CAM.34582)