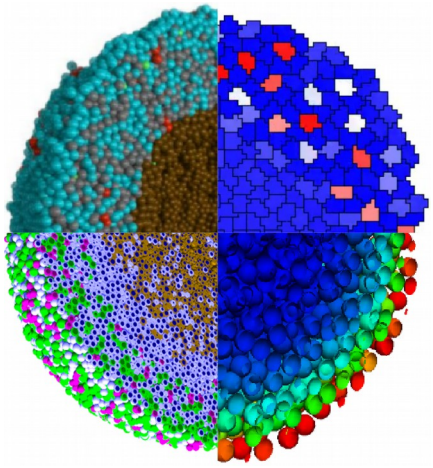

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SEMINAR IN MATHEMATICAL BIOLOGY
SUMMER TERM 2020

COMPUTATIONAL MORPHOGENESIS

OBJECTIVE
Mathematical biology is an interdisciplinary scientific research field aiming at the mathematical representation, modeling and analysis of biological processes. It provides both theoretical understanding and practical assistance in biological, biomedical and biotechnology research. Describing systems in a quantitative manner means, for instance, that their behavior can be numerically simulated such that properties can be predicted that might not be evident to the experimentalist or are experimentally inaccessible.

The seminar focuses on mathematical models and computational methods addressing key problems in developmental biology, especially in the field of dynamic spatial organization of cells and tissues. Participants will implement and critically analyze recent results from high-impact scientific papers across the topics (1) Cell motility, (2) Growth, (3) Tissue morphogenesis and (4) discuss the Grand Challenges that the field of computational morphogenesis is facing. Using software like Morpheus [https://morpheus.gitlab.io], models can readily be implemented and simulated, allowing the analysis of critical parameter dependencies and comparison to experimental data. Developed models and results will be submitted to an open and citable model repository. This seminar is intended for undergraduate/graduate students and researchers in mathematics, physics, biology, medicine, and computer science who are interested in this highly interdisciplinary research area. The final seminar program incl. 30min project presentations by participants will be developed at the Kick-off meeting.

Time and location
The seminar will take place on **4 Wednesday afternoons, 13.00-16.00:**
May 27, June 10, June 24, July 8
Location: APB-2101, Comp. Science Dept. of TUD at Nöthnitzer Str. 46 or Video-Conf.

Kick-off meeting and distribution of projects/talks
April 22 (Wednesday), 14.00-15.00, Video-Conference, **link** will be posted here

Organizers
Lutz Brusch, Diego Jahn, Robert Müller, Jörn Starruß, Andreas Deutsch (ZIH, TU Dresden)
Anja Voß-Böhme (HTW Dresden)

Seminar website
https://imc.zih.tu-dresden.de/imc/index.php?page=seminars

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