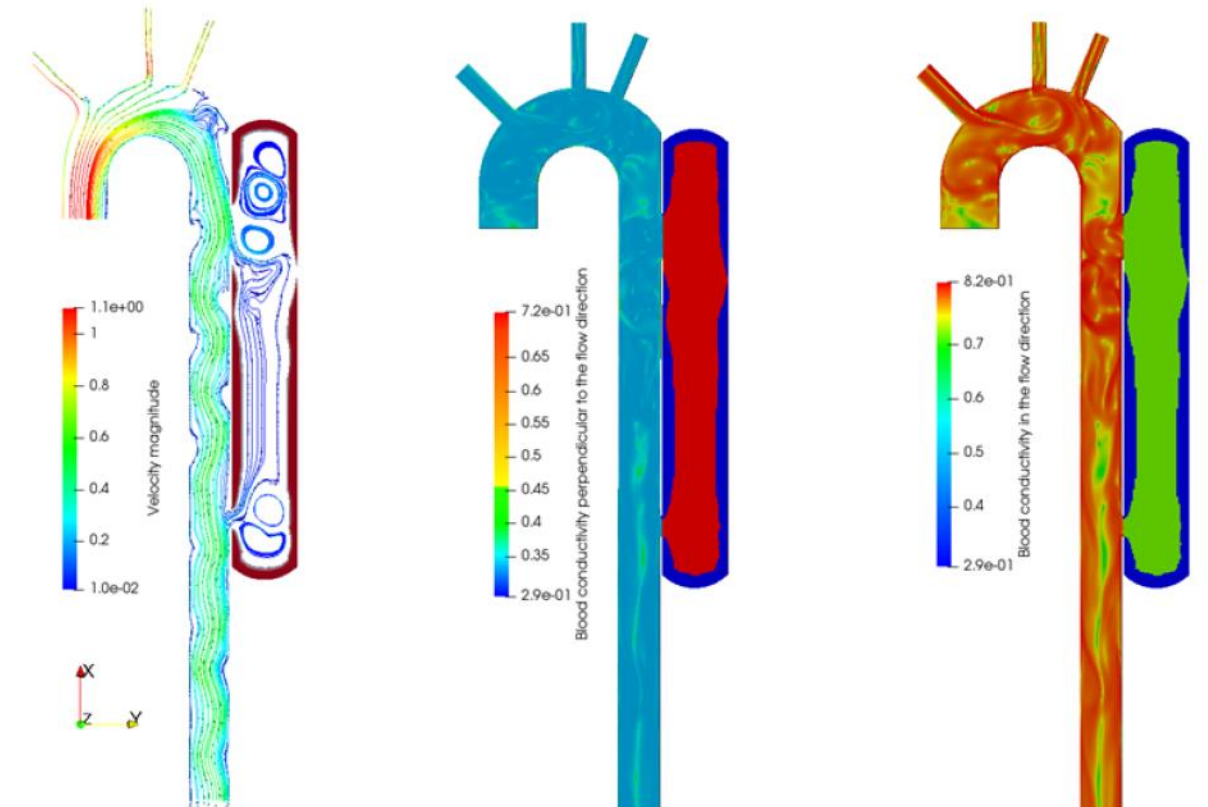


Finite element simulation of aortic diseases

Motivation:

In case of an aortic disease (e.g. stenosis, aneurysm or dissection), the blood flow in the vessel changes due to the geometrical changes, which affect the blood conductivity variations. Bioimpedance measurement methods can detect these changes. Therefore, parameterized simulation models need to be implemented in the finite element software package OpenCFS to infer an aortic pathology from the measurements. Due to the multiphysical nature of the problem, the material properties of blood, that are provided from computational fluid dynamics (CFD) simulations, should be transferred to the model's domain in OpenCFS.

This project is part of the LEAD project "Mechanics, Modeling and Simulation of Aortic Dissection" of TU Graz. You can benefit from an interdisciplinary and international project team, and there is a possibility of employment in the project.



Simulations of fluid flow and electrical parameters in case of an aortic dissection

Tasks:

- Set up geometries and mesh in CUBIT™ .
- Mapping the calculated blood conductivities from the CFD simulation model to the electric field model.
- Parameter studies based on the simulation models.

Organizational issues:

- Start as soon as possible

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