

Fluid Mechanics of Heart Valves

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Computational fluid dynamics (CFD) is nowadays extensively used in the design and verification of artificial organs since it is complementary to in vitro and in vivo experiments, which are taking place prior to clinical trials. The availability of predictive modeling tools is therefore of paramount importance for the reduction of the development cost of new devices and implants. The present seminar focusses on modeling the blood flow in mechanical and biological heart valves taking into account the fluid as well as the structure and their interaction.

Results will be shown for the valve performance, the altered hemodynamics and its consequences on the stresses on the aortic walls.