

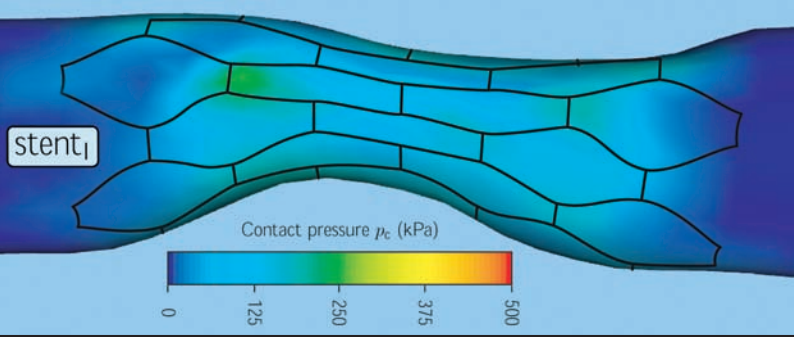
Computational Biomechanics: Implications for Clinical Medicine with an Example in Cardiovascular Mechanics

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COURANT LECTURE

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IWR • room 432 • INF 368 • 69120 Heidelberg



Computational Biomechanics: Implications for Clinical Medicine with an Example in Cardiovascular Mechanics

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The focus of the presentation is to provide a methodology for patient-specific modeling of balloon angioplasty and stenting, which is a purely mechanical procedure with the aim to dilate stenotic (or occluded) arteries to restore blood flow. In particular, we briefly review capable three-dimensional mathematical models for collagenous tissues such as artery walls and discuss their merits and drawbacks pointing also to open issues in the field. We also provide computational analyses of patient-specific problems that occur in clinical medicine. In particular, we investigate drug-eluting stents when being implanted in the curved main branch of a coronary bifurcation. It can be shown that the resulting wall stress distributions depend strongly on the stent design.

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