

# First steps towards efficient and reliable simulation of the human gait.

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A precise prediction of loads and forces within human joints would support surgical decisions and thus increase the overall success of surgery procedures. However, in vivo measurements are hardly possible and credible numerical simulation is demanding task. In this talk, we consider 3D finite element models of the human knee and particularly concentrate on efficient and reliable multigrid solvers for the arising two body contact problems, heterogeneous domain decomposition methods for the coupling/decoupling of bones and ligaments and contact-stabilized time discretizations.

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