

Einladung zum Vortrag

Multiscale/field modelling in muscle mechanics - experiment versus simulation

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Biological structures are usually characterised by complex, structural systems, challenging material properties and highly effective and optimised functions. In addition, biological tissues are living and thus growing systems whose macro and microstructures are inferior to continuous changes. In the case of active materials, e.g. skeletal muscle or smooth muscle, their special feature is to contract based on an electrical or chemical stimulus and thus generate active forces.

The talk will give a short overview on different biological tissues and their structural mechanics. In addition to experimental investigations on different scales and under different fields (mechanics, chemistry and electrical potential), a multiscale/field muscle model is presented that is able to reproduce corresponding mechanical and structural mechanical characteristics. In addition, the talk focuses on structure-based load transfer mechanisms within biological tissues and organs.

Through the combination of experimental investigations, the resulting understanding of load transfer mechanisms, the linkage of various scientific disciplines, and modelling approaches developed from this, it will be possible in the future to transfer biology-structure-based statements to questions of engineering and to answer questions at the interface of human medicine.

Donnerstag, 28.02.2019

MW 0250

09.00 Uhr

Maschinenwesen, Boltzmannstr. 15 (5502) EG, 85748 Garching

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