Interface Operators, Mathematical Models and Applications

MON/P1
14:00–14:50

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Classical mathematical models are used since several decades to describe complex phenomena in continuum mechanics, with applications in many diverse fields of engineering and technology. Recent developments in heterogeneous domain decomposition methods and multiscale geometrical modeling have opened the way to progress in modeling such complex systems as the human circulatory system. As a matter of fact, appropriate strategies can be devised to allow for an effective description of the interaction between large, 3D components, and small 1D branches. Besides, these models allow the simulation of the complex fluid-structure interaction which govern the artery wall deformation under the pressure pulse thanks to the use of suitable interface operators. Similar mathematical equations can be used in a completely different context, for instance to describe the flow behavior around sailing boats, with the purpose of optimizing yacht performances.