

Efficient solvers for coupled problems in porous media

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Short Description

Problems in Porous Media Science intrinsically often feature a high level of computational complexity. Key drivers are, e.g., the problem size and dimension of the domain, its complex, heterogeneous sub-structure, or the degree of coupling between physical unknowns. Non-linearities in the problem formulation aggravate the impact. Despite of widespread availability of high-performance computing, these factors are often limiting the simulation, as they pose a challenge for the design of a solver.

The proposed mini-symposium focuses on the development of efficient and robust solvers in this context. In an application-oriented fashion, this is demonstrated for a selection of problems coupling flow, transport and mechanics on complex geometries. Theoretical aspects and properties are considered and discussed. Further emphasis is put on an efficient implementation and software design.