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MULTI-PHYSICS SIMULATIONS WITH THE COUPLING LIBRARY PRECICE
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ABSTRACT

preCICE is an open-source coupling library for partitioned multi-physics simulations. It enables the efficient, robust, and parallel coupling of seperate single-physics solvers. This includes, but is not restricted to fluid-structure interaction. preCICE treats these solvers as black-boxes and, thus, only minimally-invasive changes are necessary to prepare a solver for coupling. Thus, existing sophisticated solvers can be used for each of the physics in a multi-physics simulation. Ready-to-use adapters for well known commercial and open-source solvers, including OpenFOAM, SU2, CalculiX, FEniCS, and ANSYS Fluent, are available. The software offers methods for equation coupling, fully parallel communication, and data mapping schemes.

The minisymposium brings together users and developers of the software. It enables the exchange of academic and industrial users among themselves, which otherwise would not know much of each other. Furthermore, the developer team an get direct feedback from the users, who they sometimes only know from mailing list conversations. Last, the software and its capabilities can be presented to others in a full and broad sense as not only the developers talk about their software, but also users report on experiences.

REFERENCES

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