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ENABLING DIGITAL TWINS THROUGH EFFICIENT SOLUTION AND COUPLING ALGORITHMS FOR MULTIPHYSICS PROBLEMS

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ABSTRACT

The development and effective utilization of Digital Twins (DT) require the ability to rapidly solve coupled problems that are multi-physics, multi-scale, multi-fidelity, and multi-rate in nature. Each one of these traits individually is challenging and has been the focus of intense research over the last several decades.

However, the importance of this task is becoming even more acute with typical DT modeling, simulation, and data assimilation scenarios involving entire systems of many heterogeneous components. This minisymposium aims to bring together a broad spectrum of researchers working on these and related topics to exchange the most recent advances in the field. The speakers will focus on coupling algorithms, mathematics that underpin such couplings, and supporting software. In scope contributions include both coupling of full-order models as well as adaptations of existing techniques to surrogate models.