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Framework for Modernization and Componentization of Fusion Modules J. CARLSSON, S. SHASHARINA, J.R. CARY, S. KRUGER, Tech-X Corporation, P. STRAND, Chalmers Univ. of Technology — There are several ongoing efforts to develop a software framework for integrated fusion simulations in the US (SWIM and CPES) the EU (ITM-TF) and Japan (BPSI). The European and Japanese efforts emphasize a standardization of the interfaces to codes within each subgroup (transport, equilibrium, linear stability, MHD, RF, turbulence, et cetera). The US efforts emphasize pairwise coupling of specific codes. The project "Framework for Modernization and Componentization of Fusion Modules" (FMCFM) primarily aims to complement the ongoing and future US integrated-modeling efforts by developing standard interfaces to US fusion codes and implement these interfaces by writing wrapper code for existing fusion libraries (transport, equilibrium and linear stability). Standardized interfaces will make it easier to validate codes and will simplify the maintenance for integrated fusion simulations by allowing drop-in replacement of components. FMCFM will also continue to liaise with related European projects and as far as possible try to ensure compatible standard interfaces. Some effort will also be spent on implementation of more robust and scalable solvers for both the Grad-Shafranov and transport equations. A comprehensive test suite for transport solvers will be developed. We will present results from the successfully concluded Phase I project and our plans for the Phase II project in more detail.
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