IMPLEMENTATION OF LANGUAGE INTEROPERABILITY INTERFACES FOR TRANSPORT MODELS AS PART OF THE *FMCFM* PROJECT

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A new generalized interface to the transport modules and libraries such as those in the National Transport Code Collaboration (NTCC) module library [1] is presented. The interface is created as a part of the Framework for Modernization and Componentization of Fusion Modules (FMCFM) project. The interface utilizes the technologies of encapsulation available in Fortran-95 that replace the COMMON BLOCK approach typical for Fortran legacy codes and allows us to create a generalized interface to the reduced transport modules. The new interface facilitates access to the transport models from integrated modeling codes and allows interlanguage interfaces using a new library of C++/Fortran-95 wrappers. This library also includes a collection of subroutines for data access from C/C++ to the Fortran 90 derived data structures. The new interface to transport modules has been applied to the the GLF23 and MMM95 transport models. Current work of incorporating current paleoclassical transport models and the GYRO nonlinear tokamak microturbulence package will also be presented. The functionality is demonstrated in Framework Application for Core-Edge Transport Simulations (FACETS) project.

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[1] A. H. Kritz *et al*. Comp. Phys. Communications **164** (2004) 108.

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