A comparison of data interoperability approaches of fusion codes with application to synthetic diagnostics SCOTT KRUGER, S. SHASHARINA, S. VADLAMANI, Tech-X Corporation, D. MCCUNE, PPPL, C. HOLLAND, UCSD, T.G. JENKINS, Tech-X Corporation, J. CANDY, General Atomics, J.R. CARY, A. HAKIM, Tech-X Corporation, M. MIAH, A. PLETZER, Tech-X Corporation — As various efforts to integrate fusion codes proceed worldwide, standards for sharing data have emerged. In the U.S., the SWIM project has pioneered the development of the Plasma State, which has a flat-hierarchy and is dominated by its use within 1.5D transport codes. The European Integrated Tokamak Modeling effort has developed a more ambitious data interoperability effort organized around the concept of Consistent Physical Objects (CPOs). CPOs have deep hierarchies as needed by an effort that seeks to encompass all of fusion computing. Here, we discuss ideas for implementing data interoperability that is complementary to both the Plasma State and CPOs. By making use of attributes within the netcdf and HDF5 binary file formats, the goals of data interoperability can be achieved with a more informal approach. In addition, a file can be simultaneously interoperable to several standards at once. As an illustration of this approach, we discuss its application to the development of synthetic diagnostics that can be used for multiple codes.

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