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Experience using Plasma States in Multiphysics Simulations[1]
DOUGLAS MCCUNE, PPPL — The "Plasma State" was developed originally in the SWIM SciDAC as a software resource for data exchange in multiphysics tokamak simulation. Commonly used time dependent data such as axisymmetric tokamak MHD equilibrium flux surface geometry, plasma temperature and density profiles, and profiles of sources of heat, momentum, particles, and current, as well as time invariant data such as machine description, shot configuration, and plasma species lists, are all shared between physics model components using "Plasma State" objects. The simple, flat structure of these objects, along with rich metadata, I/O and interpolation services, has made them relatively easy to use; as a result of this, their use has spread beyond the SWIM SciDAC into FACETS, TGYRO, and other tokamak community research applications. This poster reviews Plasma State design, current usage and experience, with consideration of potential implications for future high performance integrated modeling.

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Douglas McCune
PPPL

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