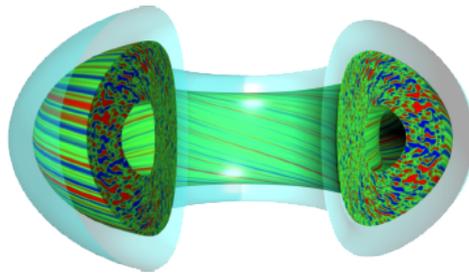


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Full life-cycle provenance of physical modules repositories for integrated modeling and analysis workflow

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“Data provenance” is critical to establishing repeatable and integrated modeling and analysis workflow (e.g. IMAS). Most of the physical modules in the workflow are published in source code. The configuration parameters and compilation environment during the module construction process can affect their output. The provenance information generated by traditional workflow management tools only documents the process of data generation, and lacks records of the construction process of the modules that generated the data. In the present work, a tool chain for the full life-cycle management of the physical module repository is developed. A common module specification is defined that contains the data interface to the physical module, as well as the description of the program coding, building, deploying, executing, and retiring process. The full life-cycle of physical modules, from source code to workflow actors, is automatically managed and documented through CI/CD tools.

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