

Web Interfaces to Fusion Codes

Abstract

From our experience in programming methods we can deploy efficient web-based, graphical interfaces that run in a browser and provide secure Internet access to site-specific data and computational physics applications. We present 2 case studies:

1. Reflectometry Diagnostic Simulation

The user defines the input plasma and reflectometer. The plasma can be parametrically modeled or based on data acquired from experiments. Visualization of the full wave solution is displayed along with the correlation of frequencies between receivers to identify turbulence and fluctuation in the plasma.

2. Plotting Results of Transport Analysis Runs for Tokamak Experiments

A new interface for interactive display of TRANSP results.

Both graphical user interfaces, running in web browsers for portability and convenient access, communicate with fusion codes running on compute servers maintained at PPPL. The web service approach facilitates collaboration, enforces security, eliminates software installation, and eases access to scientific applications.

Summary

Graphical input & visualization added to applications with minimal changes to simulation codes.

Publication quality output.

Web service is successful approach:

Broad access, enforces security policies.

Portable across users' computer platforms. Runs in browser.

No software installation.

Future Plans

NOVA-K Web Service

Retrieve profiles from TRANSP runs, set parameters.

Set up, start, & monitor NOVA-K.

Visualize results.

EIVis - Monitor Fusion Simulations

SciDAC Center for Plasma Edge Simulation

SciDAC Center for Simulation of RF Wave Interactions with MHD

Motional Stark Effect – display results of simulation

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