



Contribution ID: 178

Type: Mini Oral and Poster

Verification and Validation of Real-Time Diagnostics for the KSTAR Plasma Control

Tuesday 23 April 2024 12:35 (20 minutes)

Verification and Validation of Real-Time Diagnostics for the KSTAR Plasma Control System

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Abstract

The KSTAR (Korea Superconducting Tokamak Advanced Research) DPA (Disruption Prediction and Avoidance) project led by Steve Sabbagh and Columbia University established a need for increased real-time diagnostic inputs to the KSTAR PCS (plasma control system) to support the real-time evaluation of DECAF (Disruption Event Characterization and Forecasting) algorithms.

Test cases need to be developed for the DPA project for KSTAR.

Since KSTAR's PCS and D3D's PCS are related, leveraging D3D's PCS knowledge helps to develop test cases for KSTAR. D3D has a regression testing tool that checks to see if any changes in the candidate branch breaks any existing software. This is key to producing progressive codes for research on an ongoing basis without resorting to live testing during operations.

The test cases have to collect input data from 433 channels ranging from a high data rate of 500 kHz to 1kHz. The Input data consists of: (192) (ECEI) analog signals, (128) (ECE) analog signals, (1) 512x512 image (VPhi), (16) MHD analog signals, and (96) MHD digital signals.

<Please see the the enclosed file for the full abstract>

Minioral

Yes

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No

Are you a student?

No

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Session Classification: Poster A

Track Classification: Real Time Diagnostics, Digital Twin, Control, Monitoring, Safety and Security