

Real-Time Feedback Control System for ADITYA-U Tokamak Plasma Position Stabilisation

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- Development of transfer function models for the fast feedback power supply (FFPS), plasma position sensor and ADITYA-U tokamak. Integration of all the transfer function models to obtain the closed loop transfer function for the ADITYA-U horizontal plasma position control system.
- Experimental determination of all the constant values for the transfer function parameters. Testing of control system stability of the ADITYA-U horizontal position control using the Routh-Hurwitz criteria.
- Simulation of plasma position for the estimated closed loop transfer model in MATLAB for ADITYA-U horizontal plasma position control system.
- Plasma position control experiments in open loop configuration with pre-determined value of FFPS current.
- Implementation of FPGA based PID controller for the real-time horizontal plasma position control with different values for P,I and D.