

Abstract Submitted
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Advances in the IGNITOR Plasma Control* F. VILLONE, R. ALBANESE, G. AMBROSINO, A. PIRONTI, F. RUBINACCI, CREATE, Italy, G. RAMOGIDA, F. BOMBARDA, A. COLETTI, A. CUCCHIARO, ENEA, Italy, B. COPPI, MIT — The IGNITOR vertical position and shape controller has been designed on the basis of the CREATE_L linearized plasma response model, taking into account the engineering constraints of the machine and the features of the burning plasma regimes to be obtained. Special care has been devoted to the design of a robust control system, that can operate even when a degradation of the performance of the electro-magnetic diagnostics may occur. The coupling between the vertical position control and the plasma shape control has been analyzed, in order to allow the plasma vertical position to be stabilized also in the case where a shape disturbance is provoked by a change of the main plasma parameters. Simulations of the control system response have been carried out using realistic models of the electrical power supply system. The non-linear computation of equilibrium flux maps before and after the perturbation shows that the system is able to recover from all the assumed disturbances with this control scheme. In addition, the control of the plasma current and of the separatrix of the double-null plasma configuration is being studied.

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B. Coppi
MIT

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