

Abstract Submitted
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Toward a possible mitigation of VDEs in IGNITOR* R. ALBANESE, G. AMBROSINO, A. PIRONTI, G. RUBINACCI, F. VILLONE, Consorzio CREATE, G. RAMOGIDA, ENEA, B. COPPI, MIT — Considering the effects that plasma disruptions can have, we focus on the Vertical Displacement Events (VDEs) in IGNITOR, the high field compact machine designed for the investigation of fusion burning plasmas at or close to ignition. The stabilization of highly elongated plasma is assured on the fast time scale (tens of ms) by an integrated system designed to control on a slower time scale (hundreds of ms) also the plasma shape and the plasma current. We will discuss two different approaches toward a possible mitigation of the VDEs. The first technique considers the main physical variables related to this instability, limiting the parametric analysis to those variables that can be effectively measured, modeled and controlled with suitable actuators so as to avoid unsafe operation. The second approach consists of the optimization of the equilibrium configurations so as to guarantee better control margins while keeping the main shape constraints. This will be done using the so-called dynamical allocation of the poloidal field coil currents. The aim is to achieve the best possible compromise between keeping the desired plasma equilibrium configuration and using a set of currents far enough from the saturation of the amplifiers. *Sponsored by ENEA of Italy.

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