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Operational Space within Power Amplifier Limits for IGNITOR<sup>1</sup> R. ALBANESE, G. AMBROSINO, G.M. DE TOMMASI, A. PIRONTI, G. RUBI-NACCI, F. VILLONE, CREATE, Italy, G. RAMOGIDA, ENEA, Italy, B. COPPI, M.I.T. — The avoidance and mitigation of plasma disruptions plays an important role in the safe operation of IGNITOR, the high field compact machine designed for the investigation of fusion burning plasmas at or close to ignition. The plasma control system is designed to obtain stable closed loop plasma configurations with an assigned plasma shape and current. This accurate and integrated control of plasma position, shape and current can be indeed an effective aid for disruption avoidance and mitigation. In some cases, the PF coil currents can attain values very close to their saturation limits. The redistribution of the currents in the PF coil system with small modifications of the plasma shape can provide better control margins while keeping the main shape constraints. A critical aspect is related to the constraints imposed by the voltage and current limits of the amplifiers affecting the time needed to implement a suitable dynamic currents allocation. While taking these constraints into account, a parametric study has been carried out showing the possible enlargement of the operational space in terms of the poloidal beta and of the internal inductance values.

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