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Simulation study of disruption characteristics in KSTAR

JONGKYU LEE, Department of Nuclear Fusion and Plasma Science, UST, J.Y. KIM, NFRI, C.E. KESSEL, F. POLI, PPPL — A detailed simulation study of disruption in KSTAR had been performed using the Tokamak Simulation Code(TSC) [1] during the initial design phase of KSTAR [2]. Recently, however, a partial modification in the structure of passive plate was made in relation to reduce eddy current and increase the efficiency of control of vertical position. A substantial change can then occur in disruption characteristics and plasma behavior during disruption due to changes in passive plate structure. Because of this, growth rate of vertical instability is expected to be increased and eddy current and its associated electromagnetic force are expected to be reduced. To check this in more detail, a new simulation study is here given with modified passive plate structure of KSTAR. In particular, modeling of vertical disruption that is vertical displacement event (VDE) was carried out. We calculated vertical growth rate for a drift phase of plasma and electromagnetic force acting on PFC structures and compared the results between in a new model and an old model.

[1] S.C. Jardin, N. Pomphrey and J. Delucia, *J. Comp. Phys.* 66, 481 (1986).

[2] J.Y. Kim, S.Y. Cho and KSTAR Team, Disruption load analysis on KSTAR PFC structures, *J. Accel. Plasma Res.* 5, 149 (2000).

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