## **EVALUATION OF ELECTRO-MAGNETIC LOADS ON THE ITER DIAGNOSTIC**

## **UPPER PORT PLUG DURING PLASMA DISRUPTION**

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Electro-magnetic (EM) loads due to induced eddy current and halo current during plasma disruption are evaluated for the ITER diagnostic upper port plug. As the narrow gap with the surrounding busy and fragile occupants in the vacuum vessel port such as cooling pipes, conduits, cables, etc. restricts the allowable structural deflection of the port plug, a few options to reduce the EM loads are under consideration: slits on the blanket shield module (BSM) [1], removal of the BSM and recess of the port plug from the plasma. This study investigates the dependence of the EM loads on the number of slits and the BSM removal. In the case of removing the BSM, the neighboring blankets protect the port plug and its diagnostic equipment from the plasma by extending the first wall (FW) towards the port plug. Increment of the EM loads on the blankets due to the extended FW is also calculated. The recess of the plasma facing surface reduces the halo current which flows into the port plug. By evaluating EM load for each halo current corresponding to several recess distances, the extent of necessary recess will be estimated from the viewpoint of the structural deflection.



Figure 1: EM moments on the ITER diagnostic upper port plug depending on whether the BSM is removed or not.

[1] K. Sato, J. Ohmori, K. Ebisawa, Y. Kusama and Y. Neyatani, "Development of ITER Diagnostic Upper Port Plug," Plasma and Fusion Research, Volume 2, 2007, pp S1088.