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RMP-driven, ELM-crash-suppression on KSTAR for ITER[1]
YONGKYOON IN, Ulsan National Institute of Science and Technology, ALBERTO LOARTE, ITER, YUEQIANG LIU, GA, KIMIN KIM, HYUNGHO LEE, SANGHEE HAN, NFRI, KSTAR TEAM — KSTAR has made significant progress in resonant magnetic perturbation (RMP)-driven, edge-localized-mode (ELM)-crash-suppression in support of ITER. Utilizing the unique capability to realize ITER-like 3-row RMP configurations, a set of intentionally misaligned configurations (IMC) have been confirmed to be not only compatible with ELM-crash-suppression, but also effective in broadening the divertor heat fluxes with minimal electromagnetic loads [1]. In contrast, since no or little broadening was found in 2-row, IMC-driven ELM-crash-suppression, the origin of the divertor heat flux broadening is being investigated. Although ideal MHD-based field line tracing was not accompanied by any broadening feature, the inclusion of plasma rotation appears quite promising. The presence of the 3rd row in IMC might have led to the additional deformation on magnetic topology that would have been helically structured by dominantly resonant components from 2 rows. Based on newly established ITER similar shape (ISS) plasmas, an initial attempt of n=1 RMP on q_{95} ~3.2 was frequently challenged by mode-locking without ELM-suppression yet. The application of n=2 RMP is considered more favorable not only for ELM-crash-suppression but also for ITER-like detached plasmas. [1] Y. In et al, IAEA-FEC (2018)

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