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Comparison of Large and Small ELM Regimes in JT-60U and DIII-D[1] T. OIKAWA, N. OYAMA, Y. KAMADA, Y. MIURA, Y. KOIDE, JAERI, L.L. LAO, A.W. LEONARD, T.H. OSBORNE, P.B. SNYDER, R.J. GROEBNER, GA — MHD stability analysis for giant and grassy ELM discharges in JT-60U supports explanation of ELM phenomena as peeling-ballooning instability, which has been extensively studied in DIII-D. Both current density and pressure gradient in the edge drive peeling-ballooning instability. Edge current profile modification by plasma current ($I_{\rm p}$) ramp was recently attempted in JT-60U. Plasma current ramp-up during grassy ELM state increased the ELM amplitude and changed the ELM character to type I. Decreasing edge current by $I_{\rm p}$ ramp-down during giant ELM state, pure grassy ELM state was obtained at $q_{95} = 3.7$, $\delta_x = 0.5$ and $\beta_{\rm p} = 1.6$, where normally giant ELMs are expected. In DIII-D, gas puff experiments have been performed to vary the edge collisionality and hence the edge bootstrap current. Small ELM discharges were obtained at high collisionality. Both experiments in JT-60U and DIII-D indicate that the amount of edge current affects ELM size and support the peeling-ballooning ELM model. Comprehensive understanding of ELMs in JT-60U and DIII-D from the view point of edge MHD stability will be presented.

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T. Oikawa
oikawa@fusion.gat.com
JAERI

☐ Prefer Oral Session
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