

Negative Triangularity Effects on Tokamak MHD Stability

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- **Background:**

- Negative triangularity tokamaks: good for divertor design
- Achieved the H-mode-level confinement features with L-mode-like edge behavior without ELMs in TCV and DIII-D
- Lower MHD beta limit is the usual prediction

- **Our results:**

- Negative triangularity tokamaks are more effective in generating the field line rotational transform and therefore are favorable to the steady state confinement.
- Negative triangularity tokamaks with high bootstrap current fraction and peaked pressure profile can have higher beta limit for low n MHD modes:
 $\sim 8 L_i(I/aB)$, about twice the extended Troyon limit.

- **Future work:**

- Experimental verification with increased bootstrap current fraction
- High n mode studies and profile optimization