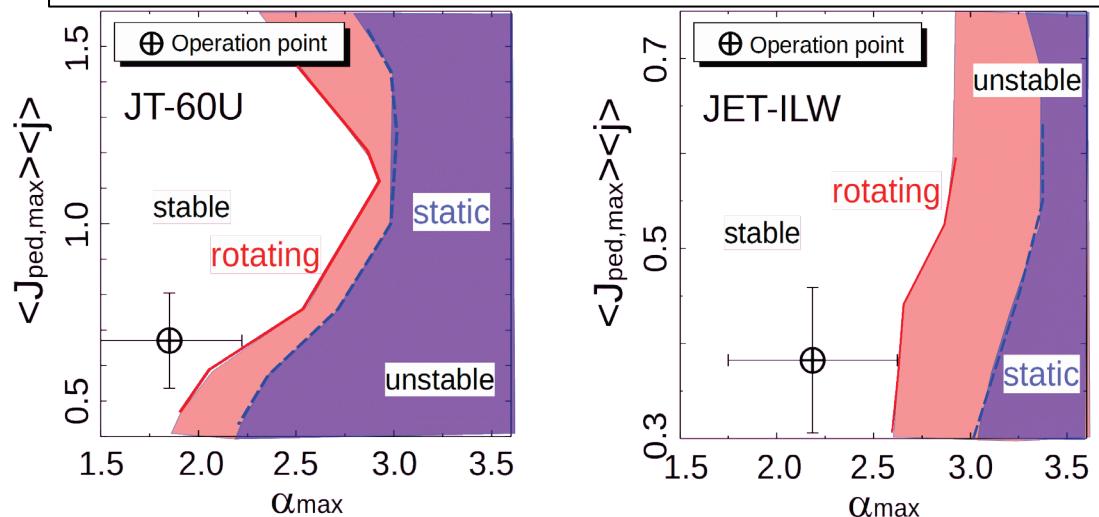


Diamagnetic MHD equations for plasmas with fast flow and its application to ELM analysis in JT-60U and JET-ILW

- Diamagnetic MHD equations and the corresponding linearized equation were derived by introducing an ordering between MHD and drift orderings.
- These equations realize to analyze MHD stability with the ion diamagnetic drift (ω_{*i}) effect in rotating tokamak plasmas.
- By solving the linearized equation with the MINERVA-DI code, it was found that plasma rotation can destabilize peeling-balloonning modes due to minimizing the ω_{*i} effect.
- This destabilizing effect has large impact on the type-I ELM stability in JT-60U and JET with ITER like wall (ILW).

Comparison of ELM stability boundary in static (blue) and rotating (red) cases in JT-60U and JET-ILW.



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