Vertical Stability Diagonsis and Control in ITER

Paul Hughes
APPH 4990: ITER Seminar Project Proposal
Columbia University

A major issue in ITER will be maintaining vertical stability during plasma operations. This is particularly challenging in part because the reduced specifications in the revised ITER design will leave less room between minimum and maximum operational parameters. Although vertical displacement speed is expected to be relatively slow (~0.5s), frequent displacement events would drastically increase damage of PFCs, and with an eye toward Demo, such events should be practically eradicated during the lifetime of ITER.

This project will look at ITER's operational requirements for vertical stability, as well as existing plans for position and stability diagnostics, control mechanisms, and feedback processing on the ITER machine, and rival control schemes (such as VS2 versus in-chamber Cu coils) will be compared. Published techniques for diagnostics and control in development on currently-running experimental tokamaks will also be examined for practicability in the context of ITER.

References

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