Abstract Submitted
for the DPP97 Meeting of
The American Physical Society

Sorting Category: 5.1.1.2 (theoretical)

Bounce Averaged Drifts of Trapped Particles in Tokamaks[1] M.S. CHU, R.L. MILLER, General Atomics — The bounce averaged drift of trapped particles, $< \omega_D >$, is studied numerically for tokamaks with a general cross-section shape and toroidal rotation profile. We determine $< \omega_D >$ accurately by using the technique of neighboring equilibria and relate it to properties local to the flux surface (B, q,...) and the local pressure and current density gradients.It is inferred from this that increasing the local pressure gradient always leads to stabilization. Evaluation of $< \omega_D >$ for NCS plasmas reveals it to be generally favorable for the majority of trapped particles inside the field reversed layer. For the very low aspect ratio nearly fully boot-strapped tokamak,[2] $< \omega_D >$ is relatively small for all trapped particles. To facilitate a theoretical comparative study, we also evaluated $< \omega_D >$ by using the generalized s-α model[3] for the representaion of plasma characteristics. It is found that $< \omega_D >$ computed from this generalized model is on the average accurate to a few percent with respect to the "exact" numerical result. For comparison, employing the original s-α model incurs errors up to 100%.

[1]Work supported by U.S. DOE Grant DE-FG03-95ER54309.
[2]R.L.Miller *et al.*, Phys. Plasmas **4**, 1062 (1997).
[3]R.L.Miller *et al.*, in preparation (1997).

☐ Prefer Oral Session
☒ Prefer Poster Session

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Date submitted: July 7, 1997 Electronic form version 1.2