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Nondimensional Transport Experiments in DIII-D¹

C.C. PETTY, T.C. LUCE, *General Atomics* — In principle, the confinement properties of future magnetic fusion devices can be extrapolated from existing experiments using the scaling of heat transport with nondimensional parameters such as the relative gyroradius (ρ_*) and the plasma beta (β). Experiments on DIII-D and JET have tested the basis of this nondimensional scaling approach to transport by comparing plasmas which have identical values for all of the important dimensionless parameters. For these ELMing H-mode discharges, the confinement normalized to the cyclotron frequency was found to be the same on DIII-D and JET, demonstrating that nondimensional scaling is a valid approach to understanding transport processes. Experimental results from DIII-D will also be presented on the scaling of heat transport with β for L-mode and H-mode plasmas. Finally, projections of ρ_* scaling experiments in H-mode discharges on DIII-D to ignition-regime discharges will be discussed, including the important influence that the H-mode threshold has on this extrapolation.

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- Prefer Oral Session
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