

Abstract Submitted  
for the DPP07 Meeting of  
The American Physical Society

**Dust Particles Observed by Laser Scattering at DIII-D**<sup>1</sup> B.D. BRAY, W.P. WEST, General Atomics, D.L. RUDAKOV, UCSD — Studies of dust particles observed by Rayleigh/Mie scattering of ND:YAG lasers during plasma operations at DIII-D show correlations with plasma configuration. Dust particles are primarily observed outside the last closed flux surface of the plasma. The mean particle density has been observed to be near  $400 \text{ m}^{-3}$  in both divertor scrape-off layer regions, corresponding to an upper or lower single-null configuration. The inferred particle size ( $\sim 100 \text{ nm}$ ) indicates this represents a small carbon density relative to measured ionized carbon density in the plasma and consequently not believed to be a significant source of impurities. However, understanding the dust dynamics remains important because of its safety implications in future burning plasma reactors. In addition, in DIII-D, the dust density varies with the phase of the plasma discharge and plasma parameters. The dust density is roughly twice as large in ELMing H-mode discharges compared to QH- or L-mode.

<sup>1</sup>Supported by the US DOE under DE-FC02-04ER54698 and DE-FG02-04ER54758.

B.D. Bray  
General Atomics

Date submitted: 22 Jul 2007

Electronic form version 1.4