

**Abstract Submitted for the Forty-Ninth Annual Meeting  
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Category Number and Subject: 5.6.2. DIII-D Tokamak

Theory     Experiment

**Dust Particles Observed by Laser Scattering at DIII-D,\***

B.D. Bray and 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.

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