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Theory Experiment

The Distribution of Particulate Sizes Observed in DIII-D During Normal Plasma Operation,* J. Burkart, *UC. Davis*, B.D. Bray, W.P. West, *General Atomic* – Large dust particulates of characteristic size greater than ~ 30 nm have been observed in the scrape-off layer and divertor regions of the DIII-D tokamak during normal plasma operations from Rayleigh scattering of 1.06μ light from the existing Nd:YAG laser array and Thomson scattering system [1]. Here we discuss techniques to estimate the particulate size distribution from the measured pulse height distribution of scattered laser light. The data suggest a double-peaked distribution of particulate sizes. One group of particulates is small enough ($\leq \lambda/10$) that the Rayleigh scattering approximation holds. Estimates of the size distribution of the group of larger dust particulates require the Mie scattering formulation.

[1] B.D. Bray, W.P. West, and J. Burkart, “Dust Measurements with the DIII-D Thomson System,” this conference.

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