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On the Role of Particle Rebound in Halo Formation in Particle Impactors SHIVUDAY KALA, J.R. SAYLOR, Clemson University — Particle impactors are a critical component of particle science measurements. These impactors consist of a nozzle through which particle laden air flows and an impactor plate oriented normal to the nozzle where particles greater than a cutoff diameter are deposited. Impactors having different cutoff diameters can be organized in series to obtain particle size distributions. Ideally the particle deposition pattern on the plate is a uniform disc of particles. However, observations have been documented of "halos" formed around this disc. The cause of these halos is not clear and have been variously attributed to rebounding of the particles from the circular deposition site to the halo location, eddies in the gas flow, the Magnus effect, and turbulence. Herein the possibility that particle rebound is the cause of halos is explored by varying the relative humidity of the gas flow containing hygroscopic particles, thereby changing the "stickiness" of these particles to determine if this changes the probability of halo formation. Simulations which quantify the degree to which other effects might contribute to the formation of halos are also presented.

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