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3-D reconstruction of incandescent lithium dust particle trajectories in NSTX[1] JACOB NICHOLS, Cornell University, LANE ROQUEMORE, Princeton Plasma Physics Laboratory, WERNER BOEGLIN, Florida International University, WILLIAM DAVIS, DENNIS MANSFIELD, CHARLES SKINNER, HANS SCHNEIDER, Princeton Plasma Physics Laboratory, RAHUL PATEL, Florida International University — Dust control is a key safety and stability concern for "next-step" fusion devices, so understanding the dynamics of dust in a fusion grade reactor is an important issue. Here, a large ensemble of trajectories from pre-characterized lithium dust is collected with the goal of verifying the various dust transport codes. Precise amounts of 40 μ lithium dust (varying from 1-150 mg) are injected into the National Spherical Torus Experiment (NSTX) plasma using a powder dropper based on a vibrating piezo crystal. The particles are heated to incandescence by electron bombardment, allowing them to be viewed by two separated visible-range fast cameras operating at $\sim$ 10,000 frames per second. The tracks from both cameras can be combined to form a single, 3-D trajectory. Particles are observed to undergo a variety of accelerations both parallel and perpendicular to the magnetic field, depending on their proximity to the scrape-off layer. The velocity, lifetime, and ionization state of the particles will be discussed.

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