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Charge of dust on surfaces in plasma XU WANG, JOSH COLWELL, MIHALY HORANYI, SCOTT ROBERTSON, University of Colorado at Boulder — Experimental investigations are reported on the charging of dust particles resting on conducting and insulating surfaces beneath plasma. The surfaces are agitated so that the particles drop through a small hole into a Faraday cup where the charge on each particle is measured. Both conducting (Ni) and insulating dust (SiO_2, Al_2O_3 and JSC-1 lunar simulant) are investigated. The conducting surface is given a bias voltage above or below the floating potential to create electron flux dominant or ion flux dominant conditions, respectively, to the surface. The dust charges more positively in ion flux dominant conditions and more negatively in electron flux dominant conditions. The insulating dust retains the charge for a long period of time ($\sim$1 hour) after the plasma is turned off. Agitation of the dust, causing it to roll around on the surface, causes the charge to decay more quickly. The conducting dust has a lower level of charge than the insulating dust because the charge is conducted from the dust particle into the conducting surface. Conducting and insulating dust having fallen from an insulating surface have approximately the same level of charge.

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