

SPACE DEBRIS SYMPOSIUM (A6)
Hypervelocity Impacts and Protection (3)

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THE STUDY OF SMALL SPACE DEBRIS IMPACT INDUCING DISCHARGE

Abstract

Impact inducing discharge on spacecraft is the most dangerous threat of small space debris effects to spacecraft. But research about this effect was rare. From 2006 when Mengu Cho's research proved that 1mm space debris impact can inducing discharge research about small space debris impact inducing discharge was of more concern. Space debris with diameters between 10m and 1mm will impact with spacecraft unavoidably in orbit since there are so many those space debris exist there. If this kind of space debris impact can induce discharge the effect might be very serious for is high impact frequency with spacecraft. Using plasma drag particles accelerator the primary research of small space debris impact inducing discharge experiments were carried out. Those experiments indicate that particles with diameters about 200m can induce discharge. The experiments also implied that except the ionized plasma the gas produced by the impact has important effect on the impact inducing discharge especially when the electrical field was strong. Finally when the electrical field was strong the discharging can result in serious electromagnetism disturbance.