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Charging characteristics of dust grains in different plasma environments[1] LONG CHEN, PING DUAN, XINGYU BIAN, WENQING LI, Dalian Maritime University — Dust particles are exist in space, earth atmosphere, industrial production and laboratory, and also charged by plasmas. Charged dust in plasma environment has been widely studied in various scientific research fields, such as the charge and discharge of dust, dust and impurities in Tokamak boundary transport, dust crystal, space debris charging and utilization etc. The charging model in the plasma environment of dust mainly used the OLM theory, but with the complicated plasma environments, relaxation process of dust particle charging and the final saturation electron quality and potential will be distinct. For example, in the tokamak dust grains are charged by plasma with a strong macro velocity; in the space environment, dust debris particles charging are not only determined by plasmas, but also by high-energy particle radiation, magnetic field, secondary electron emission, ultraviolet ray and so on. Therefore, it is of great significance to study the charge relaxation process of dust particles under different circumstances.

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