

Abstract Submitted
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Modeling of Dust-Wall Collisional Characteristics in Tokamaks¹

DAVID BENSON, ROMAN SMIRNOV, UCSD — Interaction of plasma with plasma facing components in fusion devices leads to dust production, which can enhance impurity inflow toward the core plasma. It is known that the dust particles are accelerated by plasma flows in tokamaks to high speeds ($\sim 1\text{km/s}$) that under effect of centrifugal acceleration leads to intensive dust-wall collisions. The collisions may lead as to dust fracturing and destruction as well as to avalanche-like mechanism of dust production [1] depending on properties of the dust and the target surfaces. Parameters of the collisions including the coefficient of restitution, the rebound angle distribution, the loss of dust mass as well as the probabilities of dust sticking to the wall and secondary dust production are not well known for fusion related materials and the speed range of interest. In this work the dust-wall collisions are simulated using the LS-DYNA code to explore their effect on the dust transport in tokamaks. Comparison with available experimental data is presented.

[1] S.I. Krasheninnikov et al., IAEA-CN-149/TH/P6-18

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