

Investigation of dust dynamics for airless bodies by new approach with using piezoceramic and electrical sensors

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Investigate a dusty plasma near the surface of airless bodies is planned, in particular of the Moon, a new methods.

The parameters of the dusty plasma system could be measured using the diagnostic sensors of the PmL instrument, which is a part of the future Luna-27 lunar mission [1].

As method for measuring the kinetic parameters of dust particles is used by a piezoceramic impact sensor. Detection of collisions of a dust particle with the piezoceramic plate is possible for various conditions of open space. The dust particle momentum is determined in dependence on the dust particle mass and velocity.

The dust particles velocity was also can measure with the help of the electroinductive detectors.

A method for measuring plasma parameters based on a flat Langmuir probe [2] was included in Particle Monitoring of Luna (PmL) experiment [1].

[1] Kuznetsov I.A, Zakharov A.V, Dolnikov G.G, Lyash A.N, Afonin V.V, Popel S.I, Shashkova I.A and Borisov N.D Sol. Syst. Res., 51 (2017) 611.

[2] Booth J P, Braithwaite N S J, Goodyear A and Barroy P Rev. Sci. Instrum, 71 (2000) 2722