# CLEANING DIELECTRIC SURFACES BY THE ELECTRICAL FIELDS OF THE LINEAR ELECTRODYNAMIC PAUL TRAP

***Syrovatka R.A.,* Deputatova L.V., Filinov V.S., Pecherkin V.Ya., Vasilyak L.M., Vladimirov V.I.***

*JIHT RAS, Moscow, Russia*
**syrovatkara@gmail.com*

A method against dust pollution of dielectric surfaces has been proposed. The dust removal is achieved applying alternating electric fields of special geometry created by the linear electrodynamic Paul traps, which polarize dust particles on the surface of the dielectric and draw them into the interelectrode space of the trap. The captured dust can be contactlessly moved toward the electrodes ends in a special container by an additional constant electric field. The feasibility of the approach was demonstrated by a series of experiments on the contactless removal of aluminium oxide and silica sand sifted through sieves with a mesh size of 400, 280, 200 and 100 $\mu$m from a glass surface and solar panels. It was shown that the cleaning method proposed effectively copes with the removal of sand particles smaller than 200 $\mu$m in size from a horizontal surface. Through numerical simulation, the capture of a single particle has been analyzed. For a particle of a specific size, the range of product $Q \times U$ necessary for its capture and levitation have been found.

This work was supported by the Russian Science Foundation, grant No 20-12-00365.