

# Dynamics of single Janus particle in electrostatic trap

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Active Brownian motion is widespread in nature, in biological and colloidal solutions, in the Earth's atmosphere and plasma with a condensed dispersed phase, as well as in financial models [1]. The movement of the active particle is a superposition of chaotic motion and selfpropulsion. Such particles exhibit a modification of Brownian motion due to the effects of autonomous selfpropulsion (for example, in the case of bacteria) or due to the special nature of their shape or surface, which makes their properties anisotropic. Thus, a very interesting class of artificial swimmers is Janus particles [2, 3]. Experimental data on the active Brownian motion of single Janus particle in electrostatic trap in the radiofrequency discharge plasma under the influence of thermophoretic force, induced by laser radiation, are presented. In this work, we investigated the behavior of a solitary Janus particle at different gas pressures and at different laser powers. The dynamics of active Janus macroparticles and their ensembles has been studied. Trajectories, linear displacements, mean-square displacements and kinetic energies of dust particles were obtained depending on the power of laser radiation. The research was supported by the Russian Science Foundation (project No. 20-12-00372).

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