RESEARCH NOTES

电动天平中微米单颗粒轨迹的数值模拟

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摘要 By introducing Oseen's formula to describe the viscous drag force, a more complete motion equation for a charged microparticle levitated in an electrodynamic balance (EDB) has been put forward and solved numerically by the classic Runge-Kutta method in this paper. The theoretical results have firstly demonstrated the existence of the particle oscillations and their characteristics, especially of the springpoint oscillation at large amplitude .And through the comparisons of theoretical and experimental trajectories, the adopted motion equation has proved to be able to rigorously describe the particle motion in non-Stokes region--the shape of trajectory and frequencycharacteristics are fairlv consistent and the deviations of amnliturla can usually be less than 10%.

关键词 电力学平衡 数字模拟技术 微粒振动 EDB

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