Study of cylindrical ion trap with new periodic impulsional potential form

ABSTRACT

The paper reports on some theoretical studies carried out on a cylindrical ion trap (CIT) supplied with a new periodic radio frequency impulsional potential of the form V cos Ωt[1+k cos2 Ωt]/1-k with 0≤k<1 ([]means floor function). The performance characteristics of the cylindrical ion trap impulsional mode, for the two stability regions, were computed using fifth order Runge-Kutta method and compared to the classical sinusoidal mode k=0. The physical properties of the confined ions in the r and z axises are illuastrated.

Keyword: Cylindrical ion trap; Impulsional potential; Fifth order Runge-Kutta method; Stability regions; Ion trajectory