

## **Distribution into the quadrupole mass filter with round rods.**

### **ABSTRACT**

Potential field distribution of a quadrupole mass filter with circular cross-section electrodes is described. At first, using superposition principle, we calculate potential around a round rod which is subjected to a given potential. By standard separation method, we then able to obtain the potential distribution into the quadrupole mass filter with circular rods. The results are compared with those obtained with a conventional hyperbolic rod set. Also, the results show that, for the same equivalent operating point in two stability diagrams (having the same  $\beta y$ ) the associated modulated secular ion frequencies behavior are the same.

**Keyword:** Mass filter; Quadrupole; Hyperbolic rods; Round rods; Fith order runge-kutte method; Stability regions; Ion trajectory.