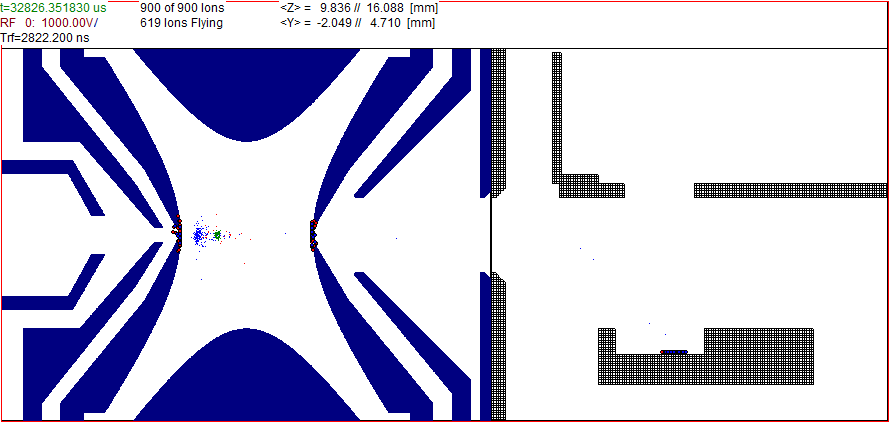
DIT Demo

This demo shows a model of a 3D ion trap with Square Wave RF supply with frequency scan. This instrument is described in literature as Digital Ion Trap (DIT) [Li DING, M.SUDAKOV, S.KUMASHIRO, A simulation study of the digital ion trap mass spectrometer, International Journal of Mass Spectrometry, 12294 (2002) 1–3].



# Example 1. High resolution resonance ejection scan in DIT.

1. **Start SIMAX. Using button  load a model *DIT\_13\_1000us\_02mTorr\_1562triplet\_31ms.wb8* from simulation folder.**
2. **Press  button to fly ions. You will see how 3 groups of ions of masses 1561Da, 1562Da and 1563Da fly inside a 3D trap. In order to accelerate simulation initial conditions of ions are saved at a time 31ms from the beginning of scan.**
3. **When simulation is completed most of the ions are ejected to the detector. Switch to “Splat Statistics” page. You will see statistics of ion splat at the detector as follows:**



**Based on this result we can estimate scan speed as 2Da/2ms or 1000Da/s. And also measure resolving power for peak of 1562Da ions as follows: 120us\*1000Da/s=0.12Da, consequently R=1562Da/0.12Da= 13,000.**

**Note that this trap has pure quadrupole geometry, while all commercial ion traps with resonance ejection scan has modified electrode geometry (stretched). In DIT high resolution is obtained using Field Adjusting electrode:**

**With appropriate selection of the DC voltage on this electrode one can obtain high resolution with resonance ejection scan.**