Contribution ID: **34**   Type: **Poster Presentation**

Theoretical study of buffer gas cooling and ion motions in a Penning Trap, and status of LPT

Tuesday, 12 May 2015 17:01 (0 minutes)

The suitable energy range of viscous damping force (VDF) model, hard sphere collision (HSC) model, and realistic interaction potential (RIP) model have been investigated by comparing the stopping ranges from the simulated data with those from SRIM code.

Using the VDF model, together with the Runge–Kutta method, ion motions in an ideal Penning Trap and different excitation conditions have been calculated, and, the recommendatory ranges of helium gas pressure and driving rf amplitude for quadrupolar excitation have been shown.

The Lanzhou Penning Trap (LPT), which is at the Institute of Modern Physics, Chinese Academy of Scences, is an ion trap aims at direct accurate mass measurements on fusion-evaporation products. All subsystems including LPT beam line, test/reference ion source, vacuum system, special radio frequency (RF) power supplies, detector system, control and data-acquisition system have been tested, and the shoot-through efficiency without magnetic field has been measured. Test works with superconducting magnet will be started in recent future, besides, some new sub-system like a multi-reflection time-of-flight mass spectrometer/separator and a gas ion collection system have also been planned.

Primary author: Mr TIAN, Yulin (Institute of Modern Physics, Chinese Academy of Sciences)

Co-authors: Mrs WANG, Junying (Institute of Modern Physics, Chinese Academy of Sciences); Mr HUANG, Wenxue (Institute of Modern Physics, Chinese Academy of Sciences); Mr WANG, Yongsheng (Institute of Modern Physics, Chinese Academy of Sciences); Mr WANG, Yue (Institute of Modern Physics, Chinese Academy of Sciences); Mr SUN, Yuliang (Huzhou University)

Presenter: Mr TIAN, Yulin (Institute of Modern Physics, Chinese Academy of Sciences)

Session Classification: Poster Session B