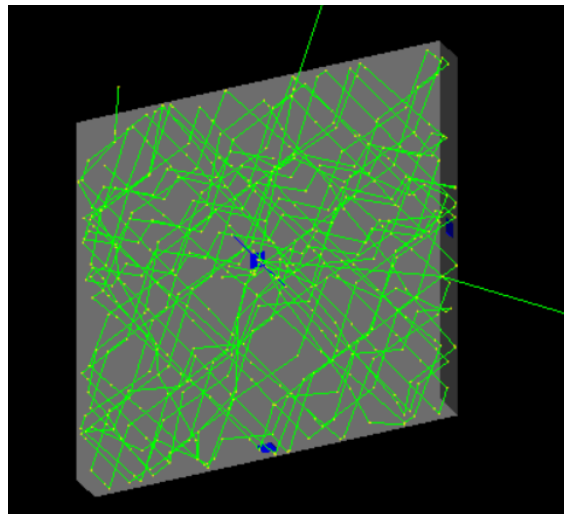


# CNAO Ions Simulation

Bari, 29/1/2020

*Corrado Altomare, Davide Serini, Fabio Gargano, Leonardo Di Venere*



- **Physics**

- **Physics List for Geant4 FTFP\_BERT\***
- **Optical Photon Production: Disabled**

- **Source**

- **Test1:  $^{12}\text{C}$  Ion @ (115,190,260,330,400)MeV/u**
- **Test2:  $^1\text{H}$  Ion @ (70,120,170,226)MeV/u**
- **Test3: Ions with Z from 1 to 26, A/Z=2, @150GeV/u**

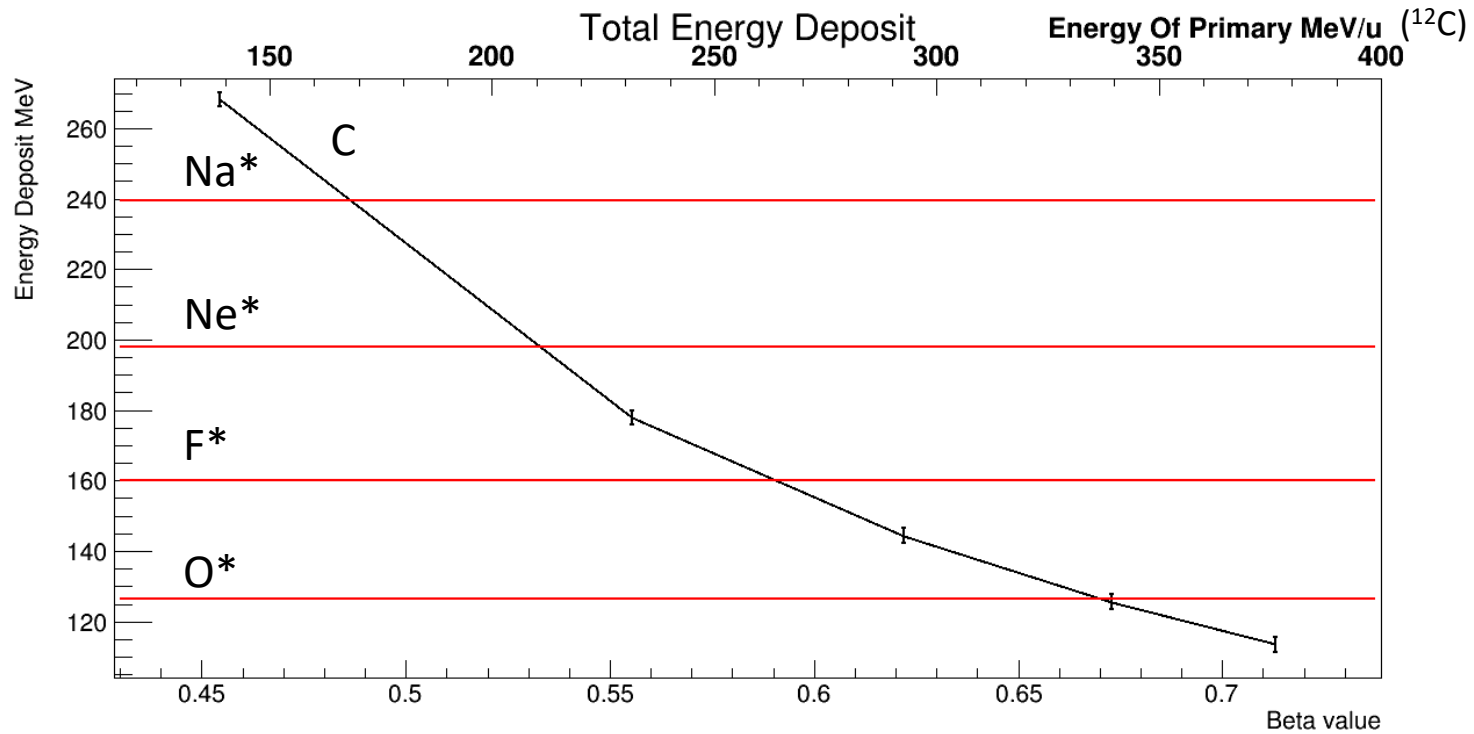
- **Geometrical parameters**

- **10x10x1 cm<sup>3</sup> Tile**
- **4x4x0.5 mm<sup>3</sup> SiPM**
- **400  $\mu\text{m}$  TiO<sub>2</sub> Wrapping**

\*[http://geant4-userdoc.web.cern.ch/geant4-userdoc/UsersGuides/PhysicsListGuide/html/reference\\_PL/FTFP\\_BERT.html#ftfp-bert](http://geant4-userdoc.web.cern.ch/geant4-userdoc/UsersGuides/PhysicsListGuide/html/reference_PL/FTFP_BERT.html#ftfp-bert)

# CNAO Ions Simulation

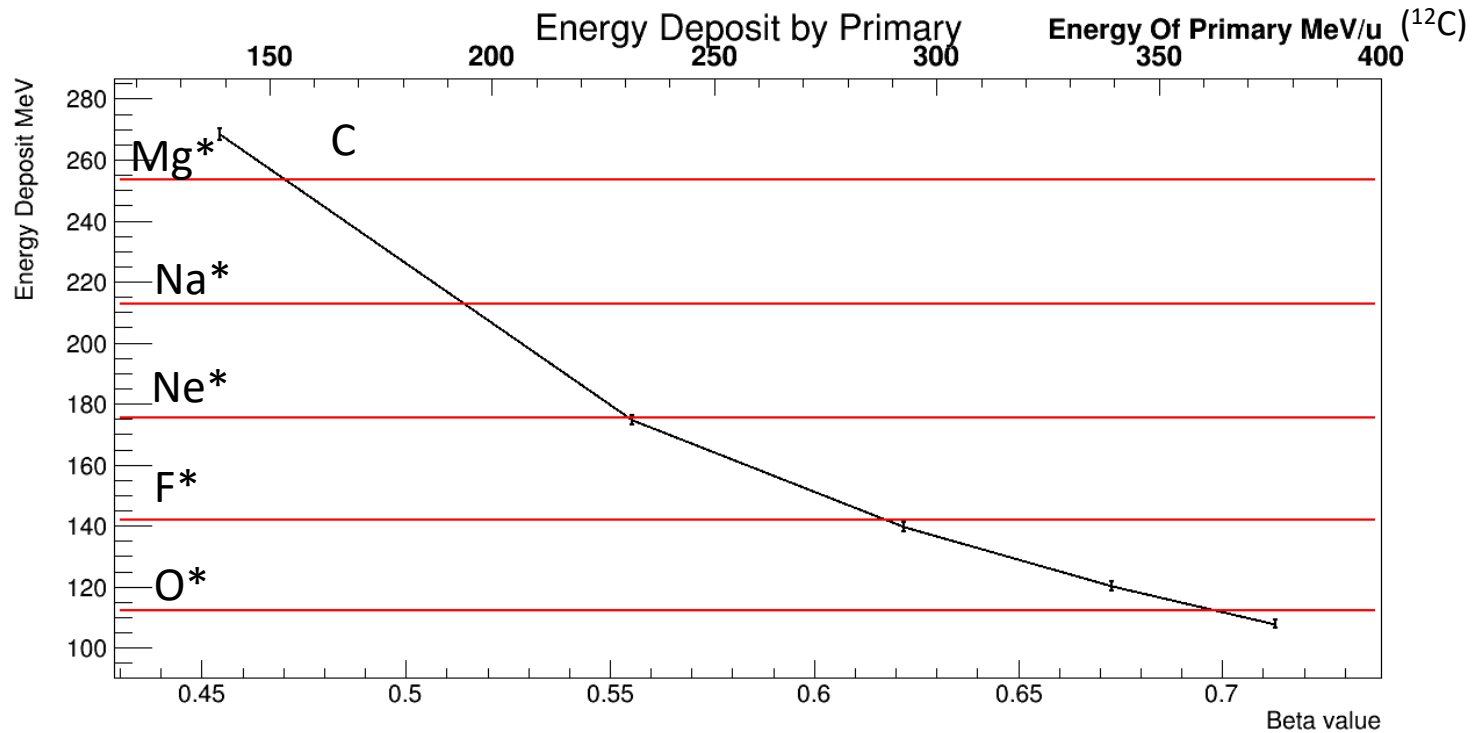
Total Energy Deposit: Ions + Delta



\* Kinetic Energy 150GeV/u,  $\beta \sim 1$

# CNAO Ions Simulation

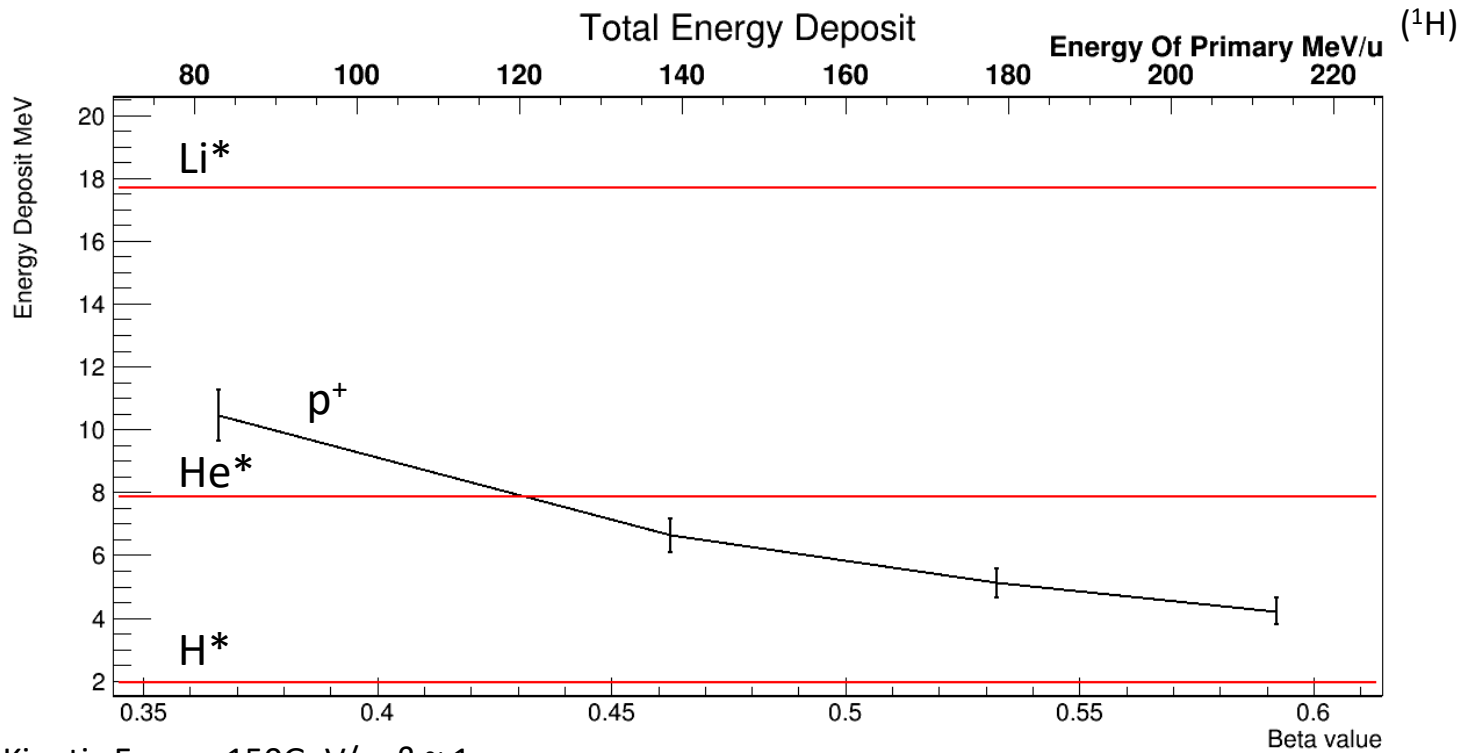
## Energy Deposit by Primary: Only Ions



\* Kinetic Energy 150GeV/u,  $\beta \sim 1$

# CNAO Ions Simulation

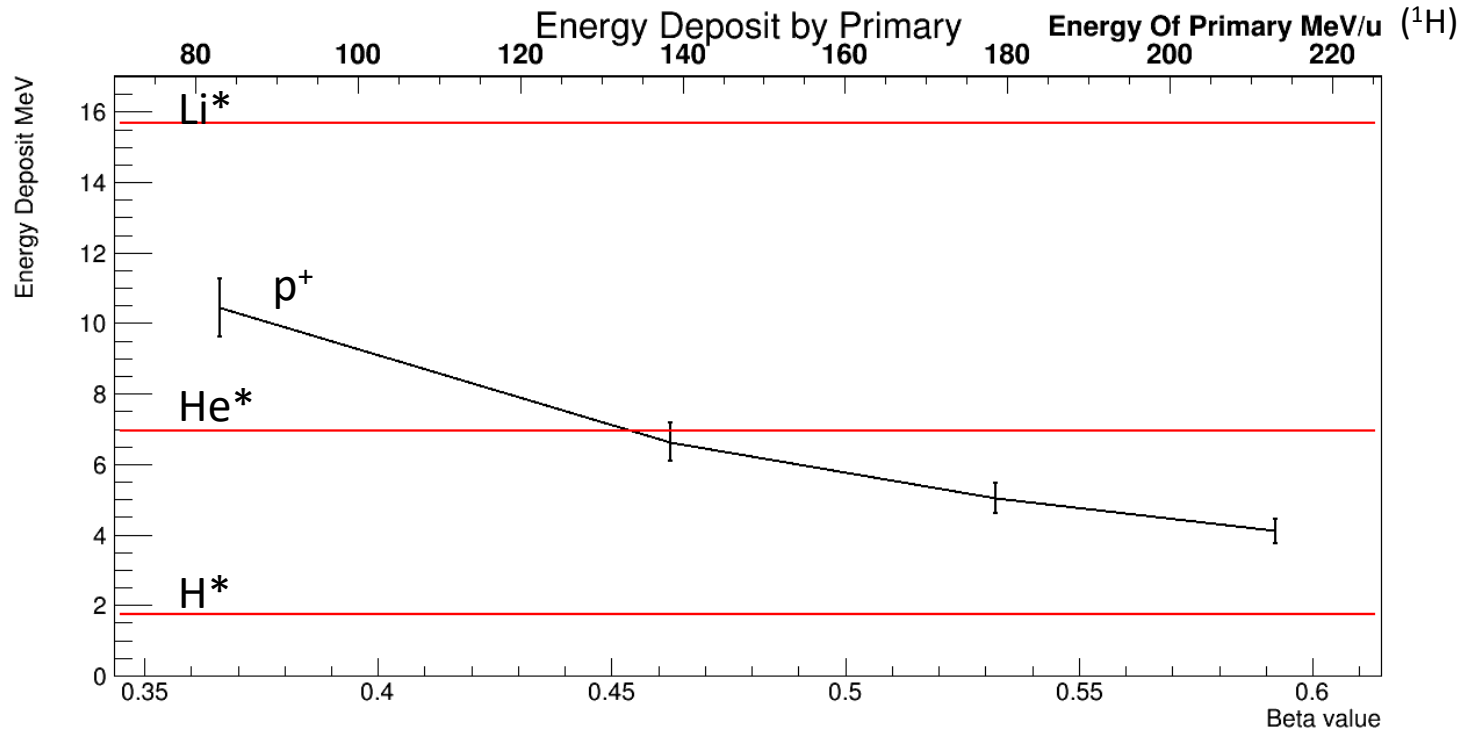
Total Energy Deposit: Ions + Delta



\* Kinetic Energy 150GeV/u,  $\beta \sim 1$

# CNAO Ions Simulation

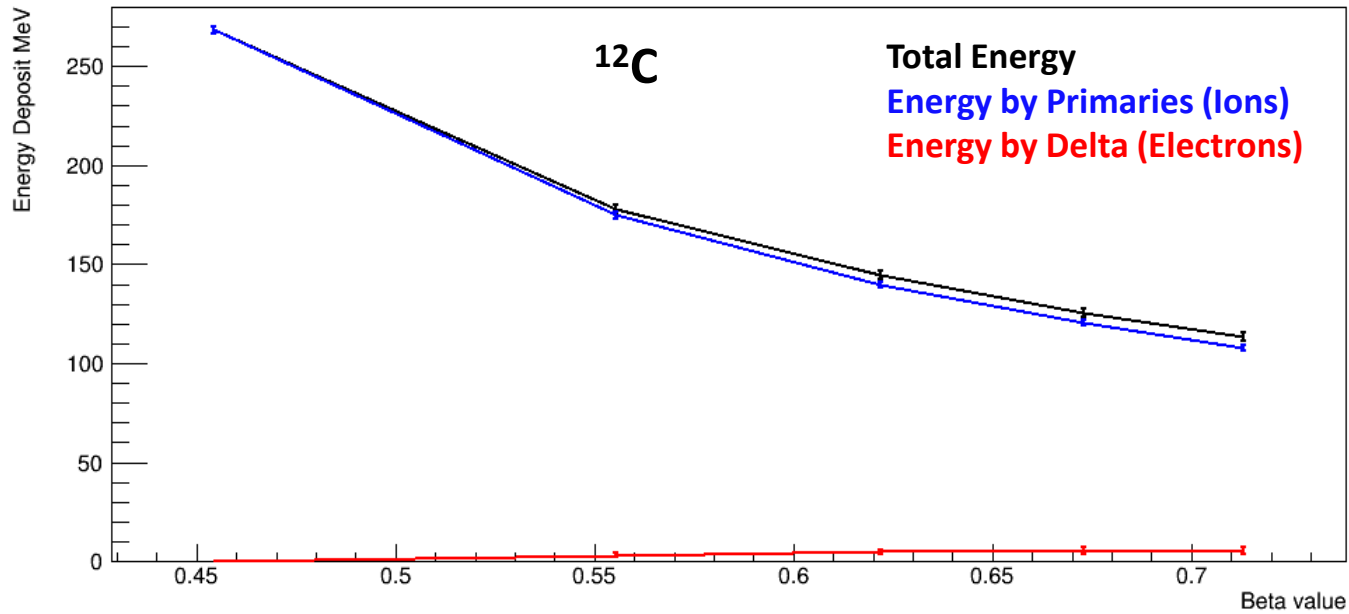
## Energy Deposit by Primary: Only Ions



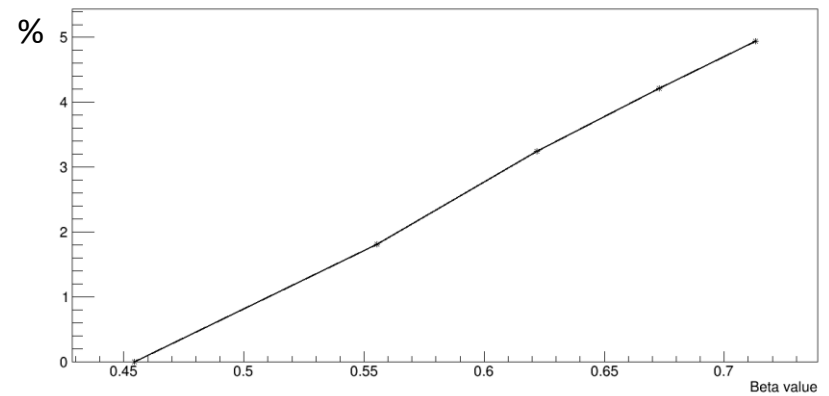
\* Kinetic Energy 150GeV/u,  $\beta \sim 1$

# CNAO Ions Simulation

Total Energy Deposit

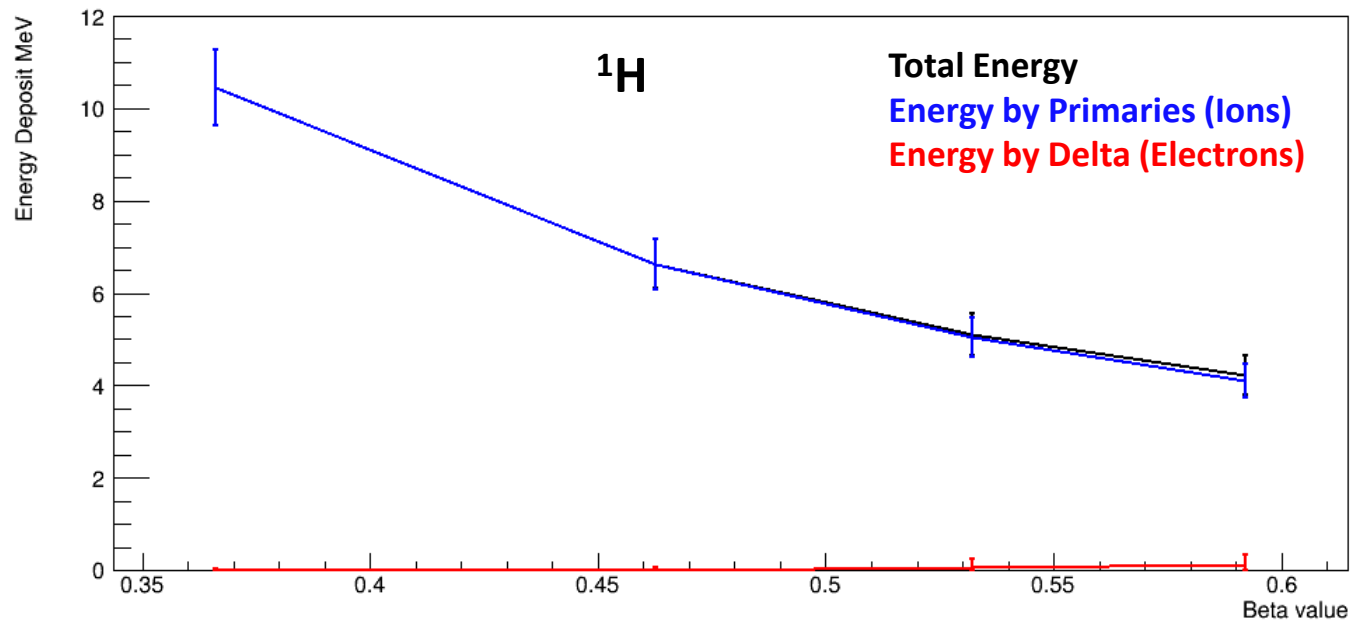


Energy Deposited By Electrons

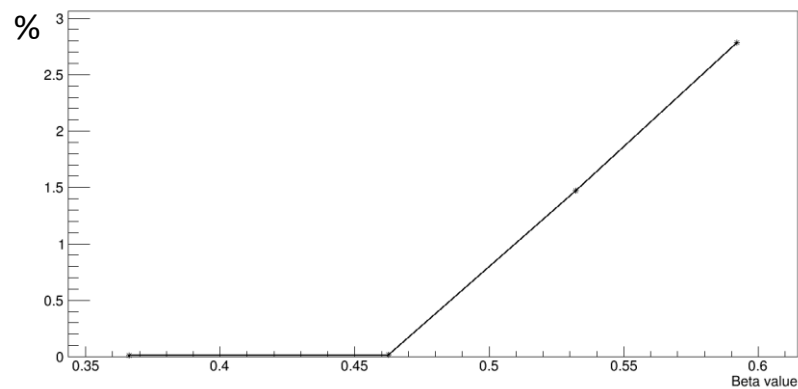


# CNAO Ions Simulation

Total Energy Deposit



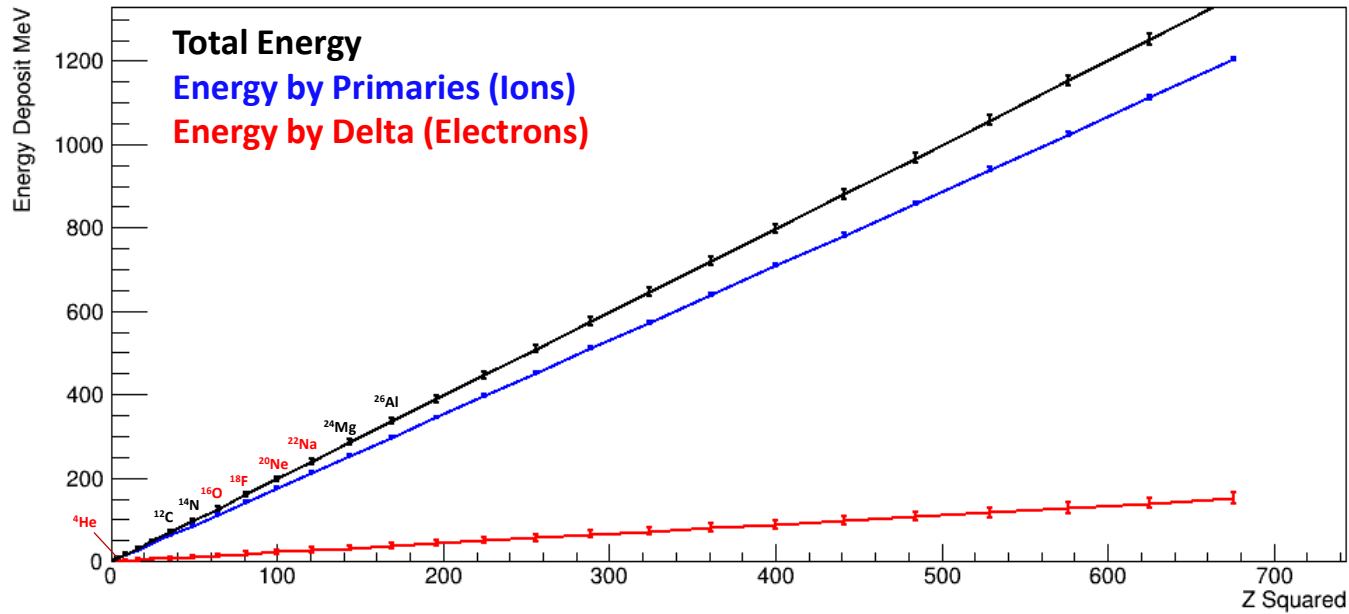
Energy Deposited By Electrons



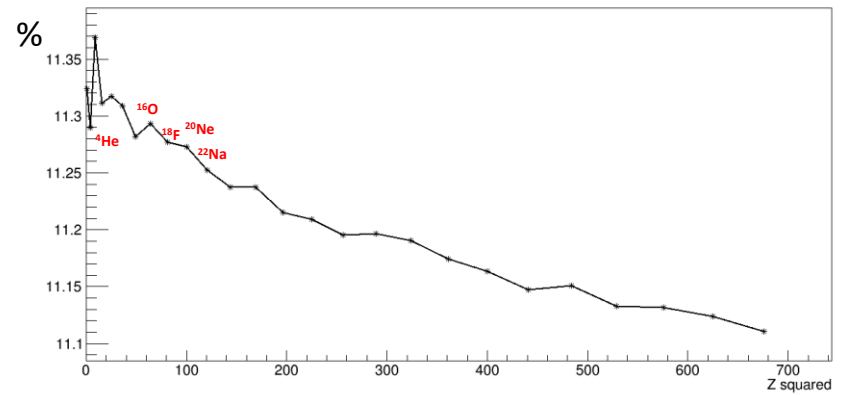


# CNAO Ions Simulation

Energy Deposit by Primary



Energy Deposited By Electrons



- **What Next**

- **Activate the Optical Photon production to test Birks' effect.**