

Update on FLUKA Simulation

Milano

Latest Production with Full Geometry of Electronics Apparatus - 1

/gpfs_data/local/foot/Simulation/newgeom_v1.0

Default geometry used

^{16}O at 200 MeV/u on C (5 mm $\rho=1.83$ g/cm³):

16O_C_200_1.root 10^7 primaries, 377837 events

Statistics to be increased in the next days

^{16}O at 200 MeV/u on C₂H₄ (5 mm $\rho=0.94$ g/cm³):

16O_C2H4_200_1.root 10^7 primaries, 279381 events

16O_C2H4_200_2.root 10^7 primaries, 279434 events

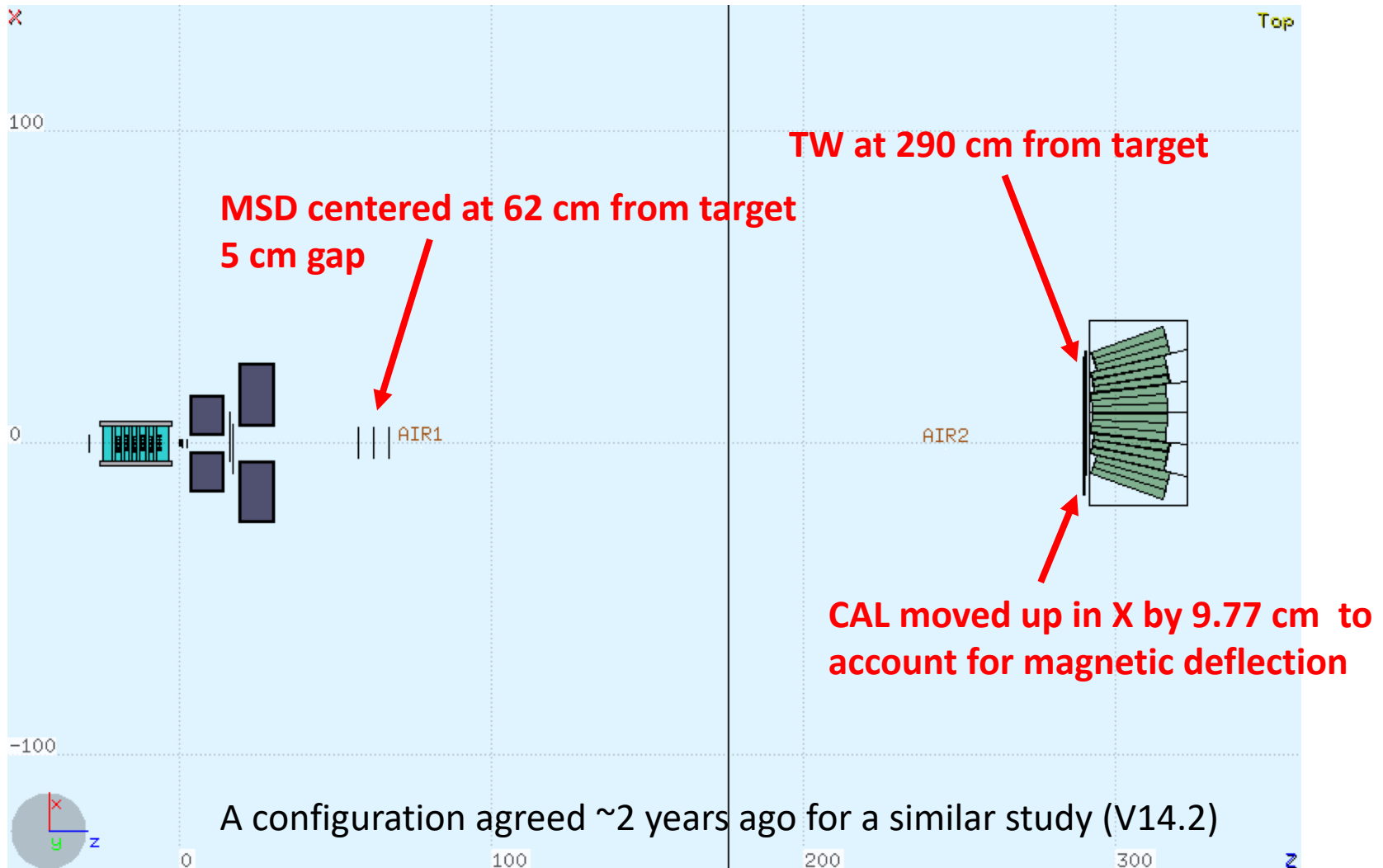
16O_C2H4_200_3.root 10^7 primaries, 278825 events

16O_C2H4_200_4.root 10^7 primaries, 279619 events

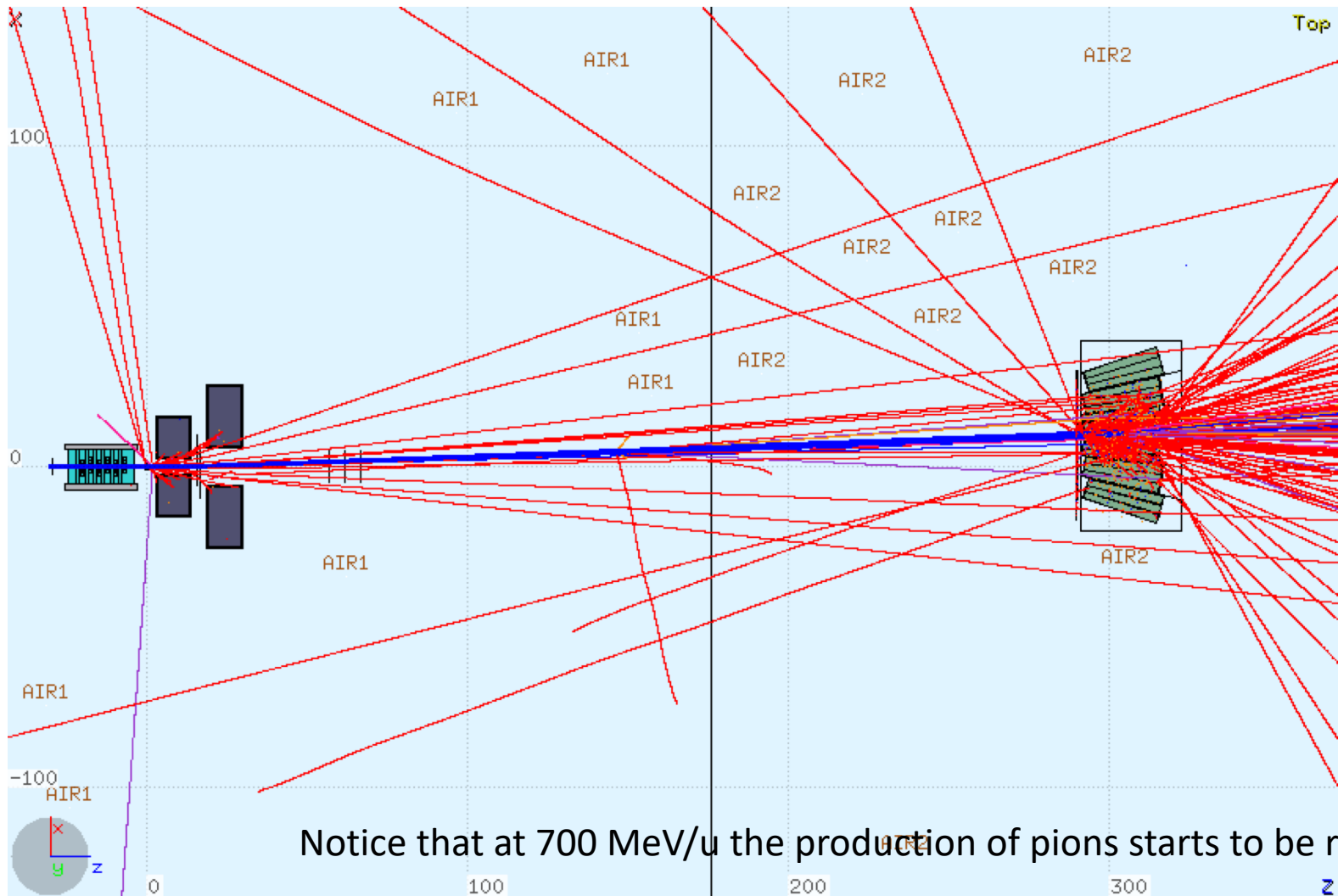
16O_C2H4_200_5.root 10^7 primaries, 279984 events

More statistics on C2H4 is needed to reduce errors in subtraction procedures to extract the cross section on H

Latest Production with Full Geometry of Electronics Apparatus – 2 High Energy



Latest Production with Full Geometry of Electronics Apparatus – 2 High Energy



Notice that at 700 MeV/u the production of pions starts to be relevant

Latest Production with Full Geometry of Electronics Apparatus – 2 High Energy

`/gpfs_data/local/foot/Simulation/newgeom_v1.0`

^{16}O at 700 MeV/u on C (5 mm $\rho=1.83$ g/cm³):

16O_C_700_1.root 5 10^6 primaries, 81533 events

Statistics to be increased in the next days

^{16}O at 700 MeV/u on C_2H_4 (5 mm $\rho=0.94$ g/cm³):

16O_C2H4_700_1.root 10^7 primaries, 121118 events

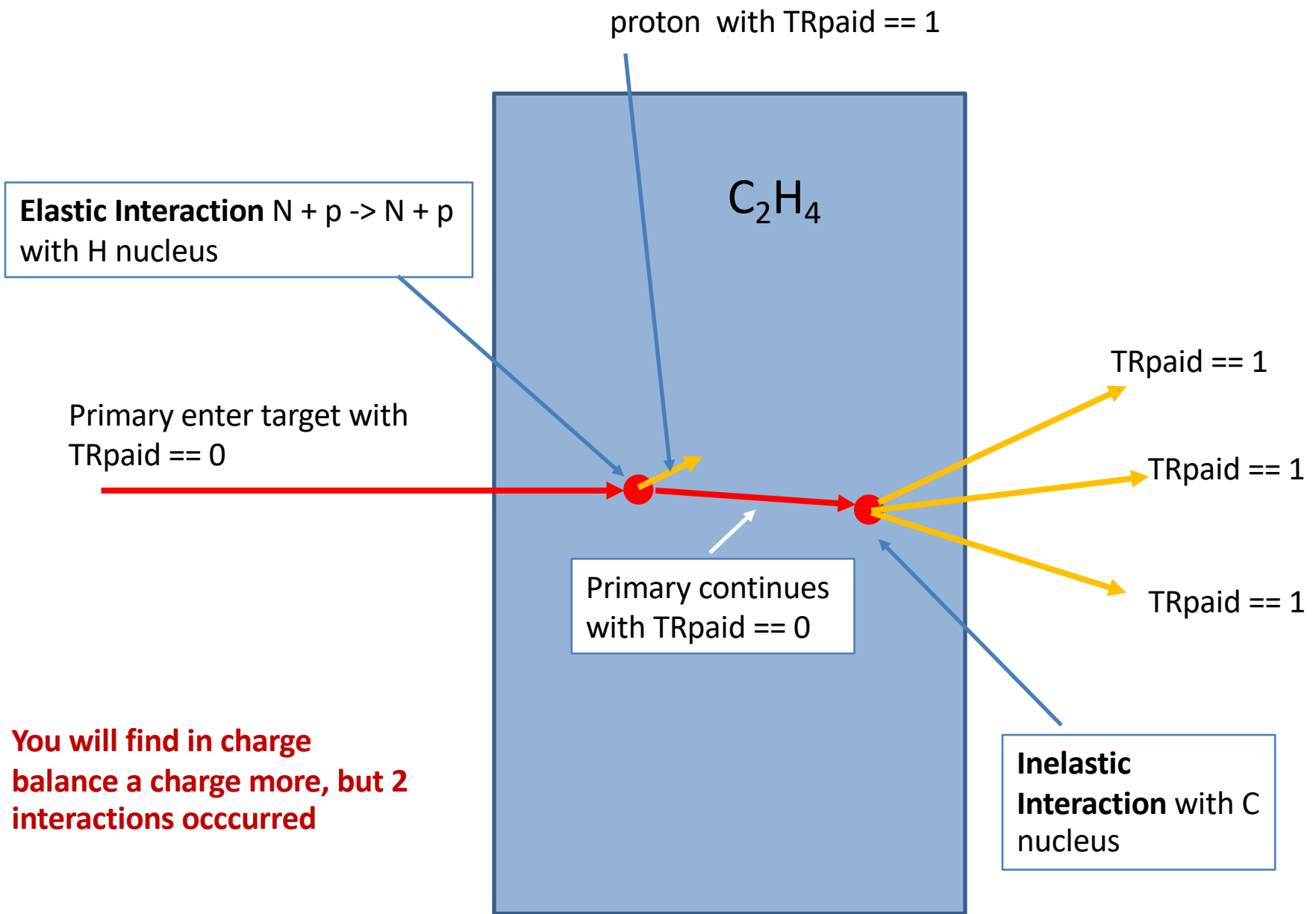
Statistics to be increased in the next days

A few considerations about the interactions in C_2H_4 target

In the present model: $\sigma(\text{H})/\sigma(\text{C}) \sim 0.34$

In the case of the interactions with H we have also elastic scattering: pN interaction in the reversed frame

Remind that, in our conventions, a particle remain «identical» after elastic scattering. In our variables: the projectile after elastic scattering has still $\text{TR}_{\text{paid}}=0$



In «MC truth» the products of inelastic interactions are identified by the fact that they have the same coordinates of production. $TR_{paid} == 1$ may be not sufficient