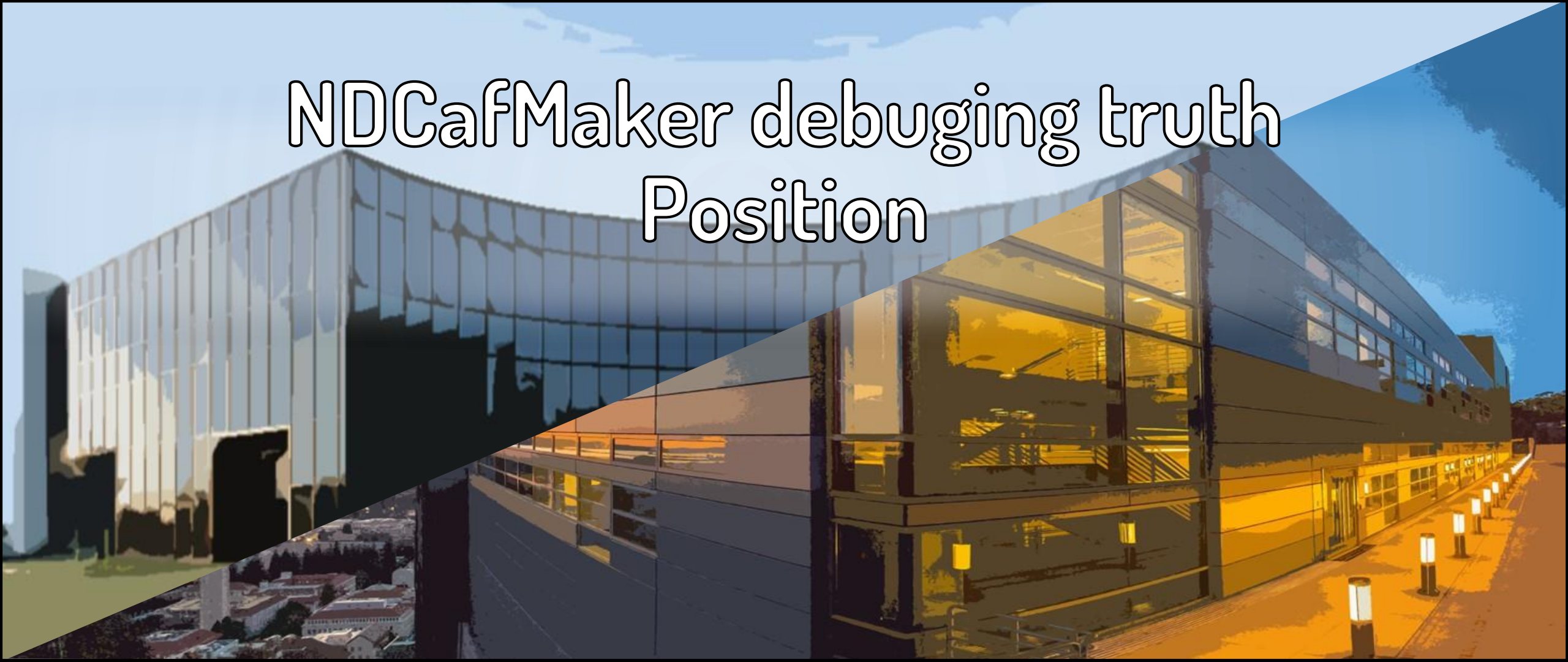


NDCafMaker debugging truth Position



Edepsim track:

RICHIE's identified trajectory:

Particle ID: 8000017 -- TRACK ID: 0 - start position (7.63305,-26.1606,63.6512) -- End position (18.9998,-26.1606,64.538) - ENERGY: 2.44084

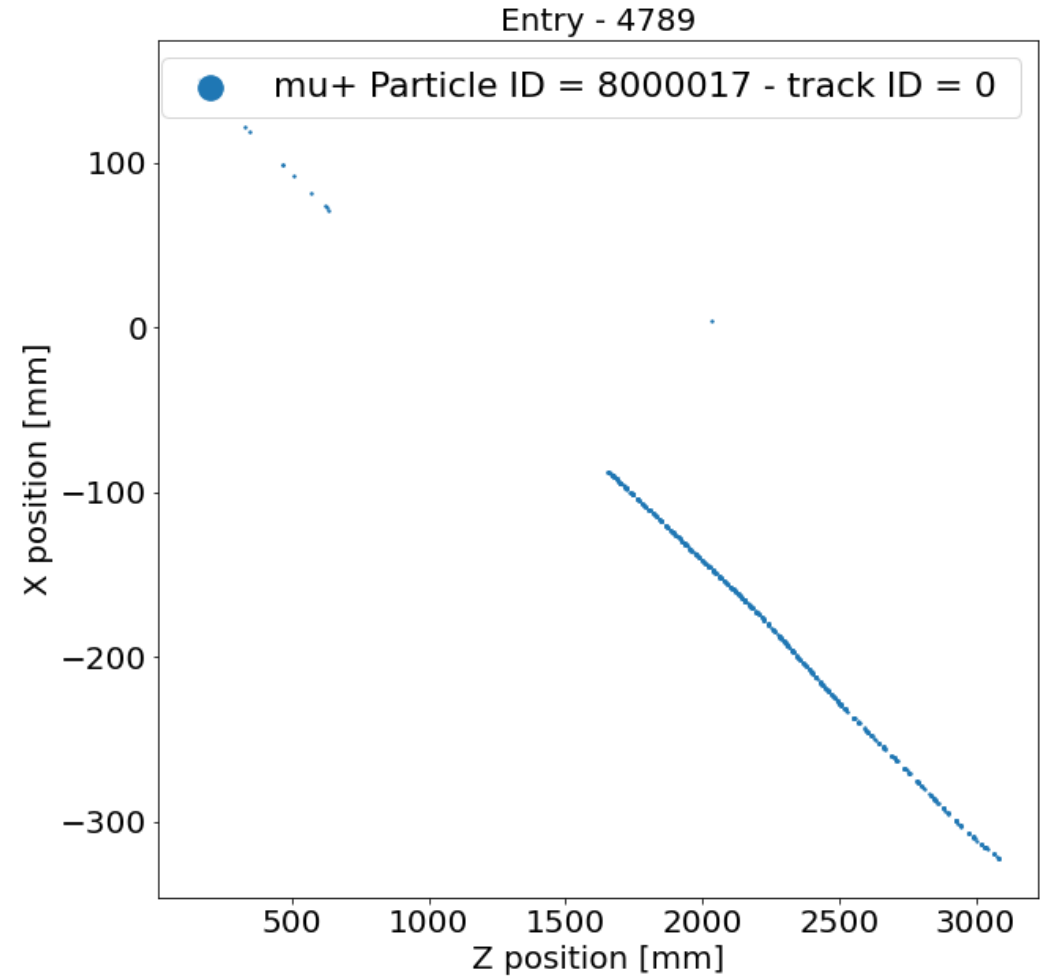
```
[54]: for pt in trajectories[0].Points:
      print(pt.GetPosition().Z()/10)
```

```
15.783468950129015
34.441100588043625
71.92495372879921
165.60680000000008
219.85300000000007
237.38239999999996
244.85488596226537
286.03942415687055
294.7162000000002
306.6034000000001
717.2741376903064
999.0530204988515
1033.9840364487789
1083.052516533528
1128.8000032295338
1159.4531198945767
1174.4127398689775
1181.2961103745913
1198.3609907420764
1207.6379435453
1225.5675189677445
1251.2230234239767
1257.0606907522206
1266.705775186692
1280.2225197164557
1287.4883933199853
1294.7191588055798
1302.1248548340473
1305.8787071550196
1311.246755320552
1313.2531473168096
```

Z start = 15.78

Z end = 1313.25

EDEPSIM diff from CAFs



Checked particle:

RICHIE's identified trajectory:

```
Particle ID: 8000017 -- TRACK ID: 0 - start position (7.63305,-26.1606,63.6512) -- End position (18.9998,-26.1606,64.538) - ENERGY: 2.44084
```

FLOW FILE for that trajectory: same energy (E_start (in MeV instead of GEV)) but not the same positions (same as edepsim)

```
In [39]: filtered_data[["vertex_id","traj_id","pdg_id","xyz_start","xyz_end","E_start"]]
Out[39]:
array([(8000017, 0, -13, [ 15.060772, -33.591274, 15.783469], [-192.9501, 208.19936, 1313.2532 ], 2440.8398)],
      dtype=[('names': ['vertex_id', 'traj_id', 'pdg_id', 'xyz_start', 'xyz_end', 'E_start'], 'formats': ['<u8', '<u4', '<i4', ('<f4', (3,)), ('<f4', (3,)), '<f4'], 'offsets': [8, 16, 112, 48, 88, 32], 'itemsize': 136})]
```

MINERVA FILE for that trajectory: same Energy (last column, in MeV), and same positions as FLOW FILE (mm vs cm)

```
root [1] minerva->Scan("mc_traj_edepsim_trkid:mc_traj_point_x:mc_traj_point_y - 218.338:mc_traj_point_z - 6913:mc_traj_point_E", "Entry$==160 && mc_traj_edepsim_eventid==8000017 && mc_traj_pdg == -13")
*****
*      Row      * Instance * mc_traj_e * mc_traj_p * mc_traj_p * mc_traj_p * mc_traj_p *
*****
*      160      *      410 *      0 * 150.60771 * -335.9127 * 157.83447 * 2440.8398 *
*      160      *      411 *      0 * -1929.500 * 2081.9935 * 13132.531 * 2440.8398 *
```

MLRECO FILE for that trajectory: same Energy (last column, in MeV) and same position as CAF FILE

→ Issue in the position defintiions

```
In [50]: filtered_data[["truth_interaction_id","gen_id","start_point","end_point","energy_init"]]
Out[50]:
array([(8000017, 0, [ 7.633048, -26.1606, 63.6512 ], [ 18.999794, -26.1606, 64.538 ], 2440.83984375)],
```