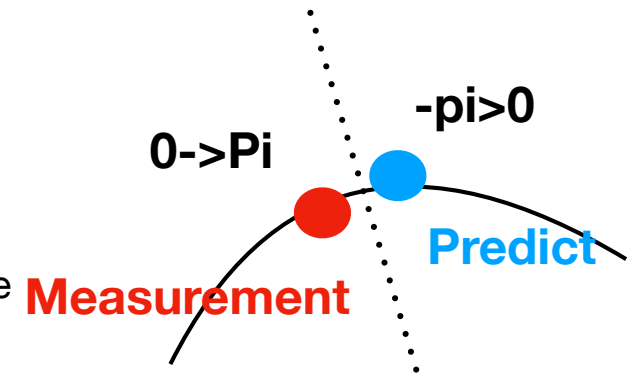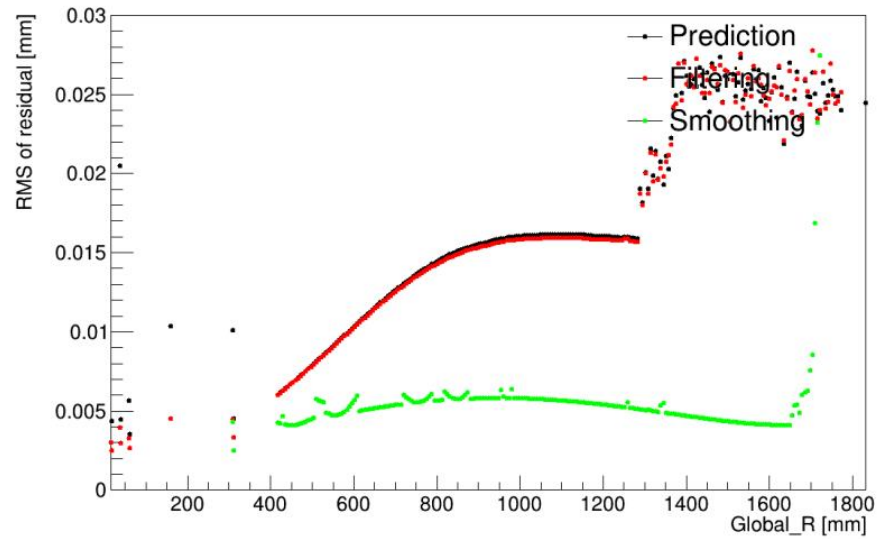# TPC cylinder +-pi bug

TPC cylinder

- A bug appears at cylinder surface measurement during Kalman filter

- Measurement and prediction opposite sign

  - Prediction is converted (add/minus 2pi) during propagation on surface

- Fix : change the measurement and predict to the same sign
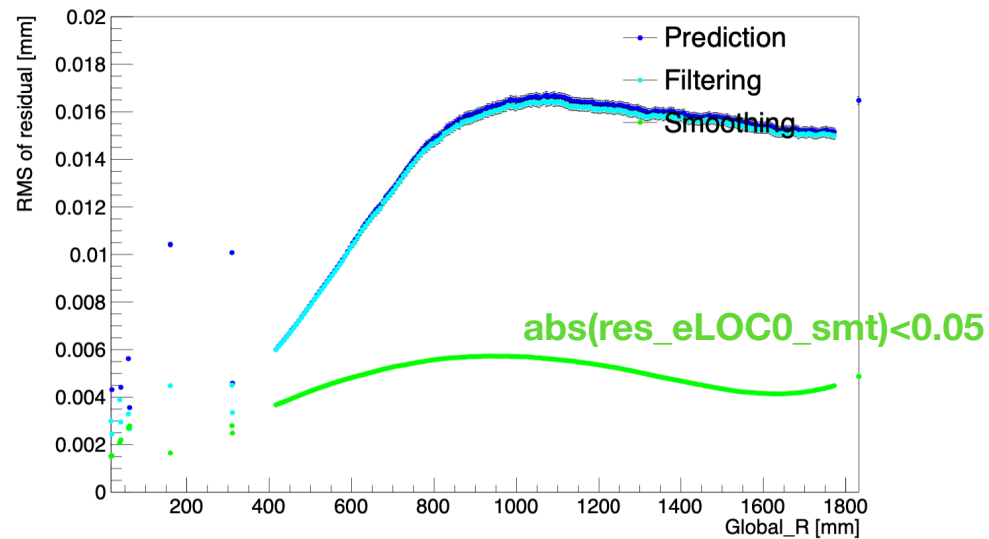
```
if( (meas_loc0+prt_loc0)<0.1*radius
    &&  fabs(fabs(meas_loc0 - prt_loc0) - 2 * M_PI * radius)<0.1 * radius
    && radius>300)  cross_2pi = true;
```

- After fix,

  - Only 0.1% abs(res_eLOC0_prt/flt)>0.05mm

  - Still 3% abs(res_eLOC0_smt) >0.05 mm, besides these smooth states, the curves looks normal

0->Pi

-pi>0

Predict

Measurement

Before fixed

After fixed

abs(res_eLOC0_smt)<0.05

After fixed and include the 3%