

MP ANALYSIS OF CRUZET

Attempt to align in steps

1) Start from high-level structures (“anchoring” using 3 hits in TOB)

```
'TOBSSDets,r0r00r','TOBDSDets,rrr00r',  
'TIBHalfBarrels,111111','TIBSSLayers,110111','TIBDSLayers,111111',  
'TIDRings,111111','TECLayers,111111'
```

2) Upload previous object and align

```
'TOBSSDets,r0r00r','TOBDSDets,rrr00r',  
'TIBSSDets,101001','TIBDSDets,111001',  
'TIDDets,101001,endCapSS','TIDDets,111001,endCapDS'
```

3) Upload previous object and align (TEC enriched sample)

```
'TECDets,101001,endCapSS','TECDets,111001,endCapDS'  
all other dets fixed
```

4) Upload previous object and align (same event selection as in step 2)

```
'TOBSSDets,r0r00r','TOBDSDets,rrr00r',  
'TIBSSDets,101001','TIBDSDets,111001',  
'TIDDets,101001,endCapSS','TIDDets,111001,endCapDS',  
'TECDets,101001,endCapSS','TECDets,111001,endCapDS'
```

Status

- Results:
 - χ^2 and residuals improve wrt the last “best” object
 - geometry comparison ok
 - but TIB+ still worse (RMS=310 μm) than TIB- (RMS=290 μm) (also layer by layer), and overall TIB worse than HIP
- Open issues:
 - very small improvement in step 4
 - initial value of `fcn` in step 4 about 1/2 of the initial value of `fcn` in step 2
 - using an extra “step 5”, initial value of `fcn` in step 5 = initial value of `fcn` in step 4
 - “warning”
`ZMxpvImproperRotation: HepRotation::eulerAngles() finds | rzz | > 1`
at line 219 in file RotationE.cc
- On-going
 - try a “step 2” separating `rPhi` and `Stereo DetUnits`
 - smaller `MomentumEstimate` (now 7 GeV)