Overlay Issues

- Simulation and Reconstruction have different geometry
- Suspicion: they're taking alignment correction from different LB-group
- Step 1: write a parser that loops over all tracking modules and see whether the differences in geometry is in the order of alignment corrections

Geometry dumps - Last time

Example for InDet::Detectors::Pixel::Barrel Trk::Layer with LayerIndex 16 (IBL) first module in the list

Overlay with **2018 PbPb data** - simulation step:

```
Trk::Surface object of type 4
transform       : Translation : (-31.151995, -13.417471,  -323.944905)
                  Rotation    : (0.11046642, -0.00076189, -0.99387956)
                                (-0.99387646, 0.00252785, -0.11046802)
                                (0.00259655,  0.99999651, -0.00047798)
```

Overlay with **2018 PbPb data** - reconstruction step:

```
Trk::Surface object of type 4
transform       : Translation : (-31.151655, -13.418575,  -323.939896)
                  Rotation    : (0.11046642, -0.00076359, -0.99387956)
                                (-0.99387647, 0.00252575, -0.11046801)
                                (0.00259464,  0.99999652, -0.00047990)
```

Diff:

```
transform       : Translation : (-0.00034   ,  0.001104,  -0.005009)
                  Rotation    : (0.0        , -0.0000017,  0.0       )
                                (0.00000001,  0.0000021, -0.00000001)
                                (0.00000191, -0.00000001,-0.00000192)
```

Sizable difference in x,y,z coordinates and in small difference in the angle!

Geometry dumps - forcing correct run & lumi. block number

Example for InDet::Detectors::Pixel::Barrel Trk::Layer with LayerIndex 16 (IBL) first module in the list

Overlay with **2018 PbPb data** - simulation step:

```
Trk::Surface object of type 4
transform       : Translation : (-31.151675, -13.418378, -323.939896)
                  Rotation    : (0.11046642, -0.00076359, -0.99387956)
                                (-0.99387647, 0.00252575, -0.11046801)
                                (0.00259464, 0.99999652, -0.00047990)
```

Forced run & lbn

Overlay with **2018 PbPb data** - reconstruction step:

```
Trk::Surface object of type 4
transform       : Translation : (-31.151655, -13.418575,  -323.939896)
                  Rotation    : (0.11046642, -0.00076359, -0.99387956)
                                (-0.99387647, 0.00252575, -0.11046801)
                                (0.00259464,  0.99999652, -0.00047990)
```

Diff:

```
transform       : Translation : (0.00002  ,  0.000197,  0.0)
                  Rotation    : (0.0      ,  0.0     ,  0.0)
                                (0.0      ,  0.0     ,  0.0)
                                (0.0      ,  0.0     ,  0.0)
```