

Simulation

Material description

- As of global tag `ddd-20150724` the Herschel geometry is included in the DDDDB. This includes not only the scintillators themselves but also a (somewhat simplified) model of the vacuum chamber sections, magnets and absorbers up to B2 and F2.

Gauss

- As of Gauss `v49r0`, Herschel can be included in the simulation by adding `HC` to the list of detectors.

```
Gauss().DetectorGeo = {"Detectors": ['PuVeto', 'Velo', 'Rich1', 'Rich2', 'TT', 'IT', 'OT', 'Spd',
Gauss().DetectorSim = {"Detectors": ['PuVeto', 'Velo', 'Rich1', 'Rich2', 'TT', 'IT', 'OT', 'Spd',
Gauss().DetectorMoni = {"Detectors": ['PuVeto', 'Velo', 'Rich1', 'Rich2', 'TT', 'IT', 'OT', 'Spd'
```

- This will
 - ◆ store the Herschel MCHits in the `MC/HC/Hits` container,
 - ◆ add the algorithm `HCHitChecker` to the monitoring sequence,
 - ◆ activate the magnetic fields for the compensator and corrector magnets, the inner triplet quadrupoles (Q1 - Q3), the D1 dipole magnets and the MCBX corrector magnets,
 - ◆ add the `Upstream`, `BeforeUpstream`, and `AfterDownstream` regions, the `AfterMuon` part of the `Downstream` region, and the non-standard elements of the `BeforeMagnet` region to the geometry,
 - ◆ extend the Geant4 tracking cuts to $z = \pm 125$ m,
 - ◆ and include the algorithm `MaskParticles` in the generator sequence.
- The options files for activating the tunnel magnets are located in `$MAGNETROOT/options/`. The field map files are located in `$FIELDMAPROOT/cdf`. Where applicable, the field maps are scaled according to the beam momentum.
- The algorithm `MaskParticles` (located in the package `Sim/GaussKine`) loops over the HepMC particles and sets the status of protons with a pseudorapidity greater than 8 and an energy greater than 5 TeV to `DocumentationParticle` (the cuts can be adjusted). We use this as a crutch to prevent elastically scattered protons from hitting the BRAN absorbers.
- This example options file can be used as a starting point.

Boole

- This will add the algorithm `HCDigitCreator` to the digitization sequence.

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