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Particle Data Table

Complete: 

About the Particle Data Table in CMSSW

Short description of the Particle Data Table (PDT) in CMSSW and how to use them.

We are using the HepPDT package for creating/using the Particle Data Table.

What is available?

There are two Particle Data Tables available in CMSSW:

- one based on the particles in Pythia : it includes hypothetical particles such as Higgs bosons and supersymmetric particles

and

- one based on the PDG booklet : it only contains experimentally observed particles, but it also contains the errors on the measurements.

It is advised to use the Pythia table (for consistency with the generated particle properties). THIS PDG TABLE WILL DISAPPEAR SOON (in 1_4_0) to have 1 consistent table throughout our software !!!!!

Using the Particle Data Table in CMSSW

- In your .cfg files, include the following line:

```
include "SimGeneral/HepPDTESSource/data/pythiapdt.cfi"
```

- In your code, you can access the particle data table as follows:

```
// getting the table from the EventSource es and filling it into pdt
ESHandle <ParticleDataTable > pdt;
es.getData( pdt );
```

- to see what you can do with the table, you can have a look at the

header files in:

<http://clhep.cvs.cern.ch:8180/cgi-bin/clhep.cgi/CLHEP/HepPDT/HepPDT/>

Some examples:

```
const DefaultConfig::ParticleData * part = pdt->particle( "mu-"); // get the muon data
cout <<" Particle properties of the " << part->name() <<" are:" <<endl;
cout <<" Particle ID = " << part->pid() << endl;
cout <<" Charge = " << part->charge() <<endl;
cout <<" Mass = " << part->mass() <<endl;
```

- an example of an EDAnalyzer ("HepPDTAnalyzer") that prints out some particle properties can be found in

CMSSW/SimGeneral/HepPDTESSource/test

- for questions or problems, please contact Filip Moortgat and Luca Lista

Review Status

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