**Introduction**

- Complete Detector Description
  - Providing geometry, materials, visualization, readout, alignment, calibration...
- Supports full experiment life cycle
  - Concept development, optimization, operation – easy transition stages
- Single source of information
  - → consistent description
  - Use in reconstruction, simulation and analysis, etc.
- Licensed under:
  - [LGPLv3](https://www.gnu.org/licenses/lgpl-3.0.en.html)
  - Free as in Freedom

**Description**

- Description of a tree-like hierarchy of detector elements
- Detector Element describes:
  - Geometry, environmental conditions...
  - and extensions

**Conditions**

- Provides access to consistent set of values to a given time and accompanying data
- Supports for hosting alignment results and application to geometry
  - Global and Local (mis-)alignment
- Supports multi-threading

**Plugins**

- Providing input handlers, sensitive detectors for most cases...
  - Providing palette of most 'common' sensitive components for trackers and calorimeters
- Several IO handlers: LCI0, ROOT, StdHep, HepEvt, HepMC

**Detector Palette**

- Scalable and flexible generic drivers available
  - Parameters are provided in compact XML files
- Scale, change layers, radii, composition visualization attributes...
- Users can easily write their own detector drivers

**Options**

- Option 1: wgt=3
- Option 2: wgt=5
- Option 3: 

**DD4hep**

Detector Description Toolkit for High Energy Physics

[http://dd4hep.cern.ch](http://dd4hep.cern.ch)

**Evaluation**

- For Sim Rec Analysis and Visualization

**DDG4**

- In-memory translation of geometry TGeo → Geant4
  - Materials, solids, limit sets, regions, logical volumes, placed volumes and physical volumes
- External configuration via plugin mechanism
  - Supports configuration via XML, Python or ROOT-AClick
  - Property mechanism to configure plugin instances
  - Use plugin mechanism to configure: Generation, Event Action, Tracking Action, SensDetector, PhysicsList...
  - Provides out of the box MC truth handling w/o record reduction

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