Hall D collaboration mtg
JLab, March 16, 2001

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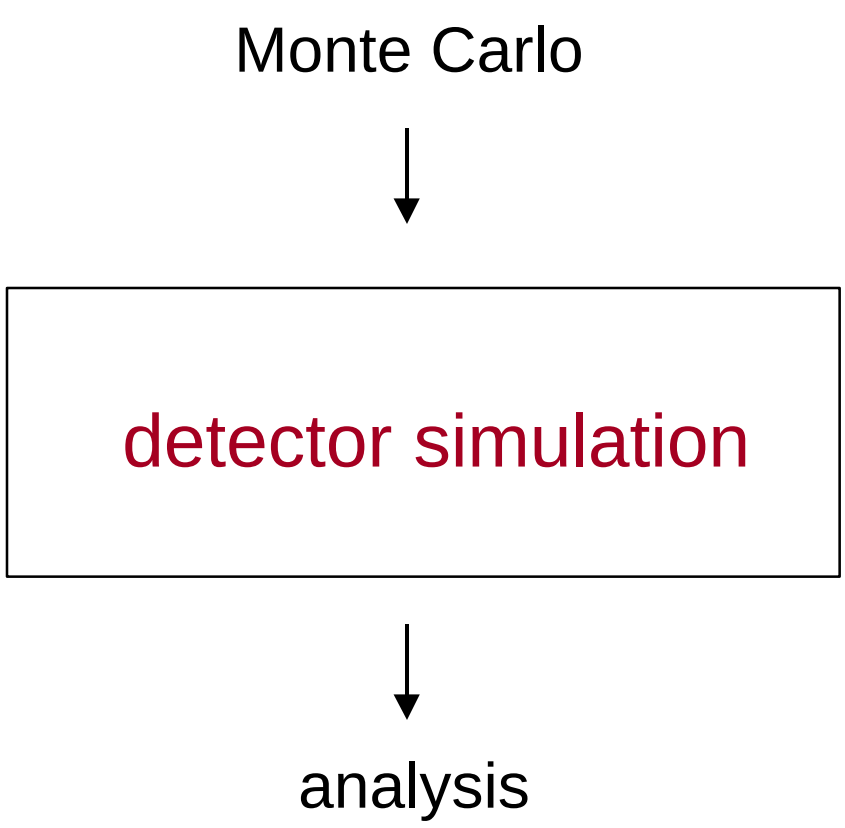
Simulation



Detector simulation tools

✓ **MCFast**

- reliable for acceptance, resolution
- 10^3 events/cpu/s
- in production

➲ **Geant 3**

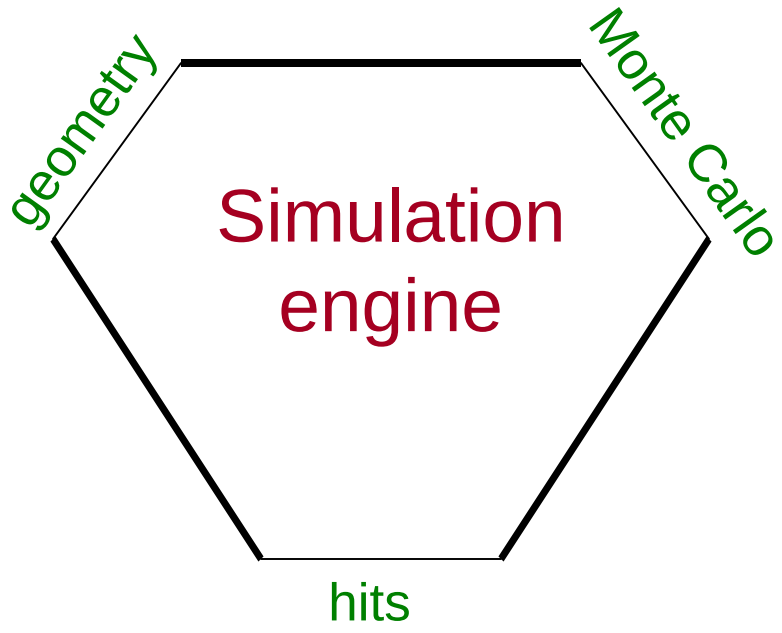
- reliable for e-m interactions, bg
- 10 events/cpu/s
- **under development**

? **Geant 4**

… this list will grow over time:

standard interfaces need are needed

Detector simulation interfaces



What is inside the figure is mostly provided.
For the interfaces, you can either:

❶ write a new **geometry** + **MC** + **hits** package for each simulation tool

❷ design general **geometry** + **MC** + **hits** packages and **interface** them to each tool

What exists?

✓ **HDfast** contains functional geometry + hits packages

✓ It implements an interface to MC generator **genr8**

☛ The simulation group must decide how much of the existing tools are general enough to standardize.

What do we need for the cdr?

Answers to specific questions:

❶ Accurate acceptance and resolution following from design decisions ➡ effects on PWA systematics

tool of choice: **MCFast**

❷ Realistic estimates of electromagnetic background for total rates in detectors and the trigger pipeline.

tool of choice: **Geant 3**

HDGeant

- coming into production now
- MC interface to **genr8**: *coming soon*
- geometry tool **gpp:**
  - reads in MCFast geometry database
  - writes f77 interface code for Geant 3
  - tested successfully with current db
  - flexible algorithm, written in c++
  - in *cvsroot/HDGeant/gpp.C*
- contains detailed photon beamline description for accurate e-m backgrounds.
- photon beam generator for coherent bremsstrahlung source is available