



Status of OSCAR

(CMS GEANT4 simulation)

Vicente Lara (CERN)
Pedro Arce (CERN/IFCA-Santander)

GEANT4 Workshop
5 july 2001



Status

Geant 4

Geometry:

- All geometry up-to-date
- Hunting overlaps
- More detailed checking in progress

Magnetic field:

- Up-to-date
 - 2D field map
 - 3D TOSCA field map
- Integrators
 - SimpleRunge
 - RKG4



Status (II)

Geant 4

Primary generator:

- CMS particle gun:
 - Scan in θ , η , energy
 - Random in θ , η , energy
- Interface with HEPEVT ASCII files
- Interface with PYTHIA ntuples

Hits:

- Transient hits implemented
- Persistent (Objectivity) hits
 - Almost done for muon system
 - To be done for the rest

Physics list:

- Basic electromagnetic and hadronic processes



Production

Geant 4

- $O(10^3)$ events produced
- Problems in magnetic field
 - Volume overlaps?
- Too many particles produced in some volumes ($> 10^6$ particles/event)
cuts per volume needed
- Tracking in vacuum
user limit



Plans

Geant 4

- Tuning of cuts for performance
 - First OSCAR milestone:
"Reproduce the physics results of the GEANT3 simulation
with the same performance"
- Hits being produced to be read by reconstruction software
- GEANT3 must soon be replaced by GEANT4
cuts per volume needed

Milestone: Physics TDR (december 03) must be produced
with GEANT4 events