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Subject: A starting point on the requests to be answered by a common geometry API

Posted by [lima](#) on Sat, 05 Jun 2004 17:12:16 GMT

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This list is the result of a discussion carried out during the LC simulations workshop at Argonne. Please add to this topic your comments and suggestions to this list. Comments from reconstruction algorithm developers are specially encouraged.

Guilherme, for the  
Worldwide LC Simulations working group

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Requests to be answered by a common geometry API  
a starting point

\* reqs on the geom system:

- . full detector
  - name/tag
  - version
  - others?
  
- . given (x,y,z):
  - material properties
    - density, radlen, intlen, others?
  - E-field
  - B-field
  - distance to closest detector element (is this needed)?
  - cell/channel
    - . id
    - . shape
      - . dimensions
    - . distance to closest edge
    - . volume, area, etc (needed?)
  
- . given volume (cell/channel) id
  - center position
  - local <--> global coords transformations
  - neighborhoods?
  - geant4 attributes

- . given  $A(x_a, y_a, z_a)$  and  $B(x_b, y_b, z_b)$  (straight line only!)
    - distance
    - # radlens
    - # intlens
    - integral  $E \cdot dl$  or  $B \cdot dl$
    - collection of traversed volumes
  
  - . hierarchical view: given a volume
    - collection of mutually exclusive, non-overlapping subvolumes
    - parent volume
    - list of all parents
    - sensitivity
    - type (calorimeter or tracker)
  
  - . given  $\text{vecP}(p_x, p_y, p_z) \dots$ 
    - nothing from a geometry system, but from a client of the geometry system
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