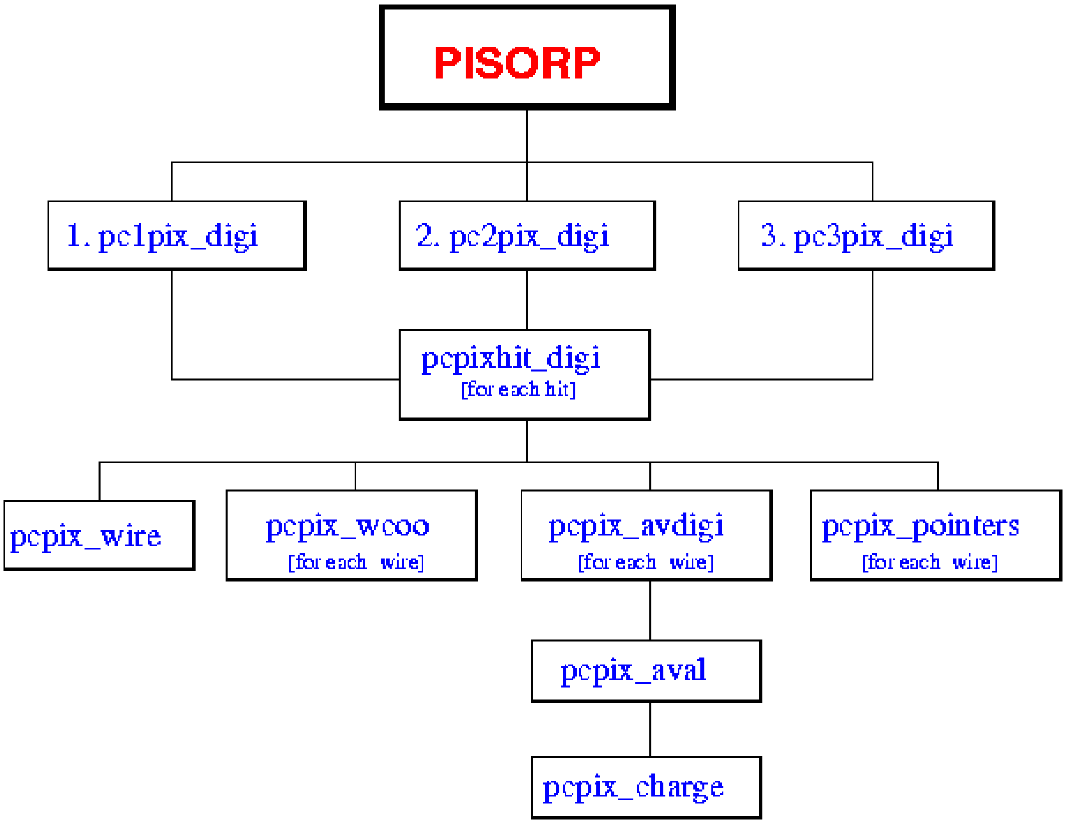
PC Hit Simulation

The detailed description of hit simulation algorithm is given in
http://rsgi01.rhic.bnl.gov/~kirill/pc/pcpixsim.html

Program Flow



Below is a brief description of the function of each routine:
pc1pix_digi, pc2pix_digi, pc3pix_digi: These initialize the generic arrays, call **pcpix_hitdigi** for every hit in the pad chamber, and then fill the **pcXpixpads** data structure using the **pcpix_hitdigi** output.
pcpix_hitdigi: Calls **pcpix_aval, pcpix_wire**, then calls **pcpix_wcoo, pcpix_avdigi** and **pcpix_pointers** for each wire the particle traverses. Fills the **qpad, ntrpad**, and **itrpad** arrays. Main routine for generic digitization.
pcpix_wire: Calculates the numbers of the wires the particle traverses using the entry and exit coordinates.
pcpix_wcoo: Determines the cell number and relative position of the particle along the wire.
pcpix_avdigi, pcpix_aval, pcpix_charge: Calculates the charge distribution from the **pcpix_wcoo** and **pcpix_wire** outputs.
pcpix_pointers: Fills out the pointers to the GEANT hit responsible for the charge deposited.
pcpix_qresol: Called after hit loop in **pcpix_hitdigi**. Adds noise charge to each pad.

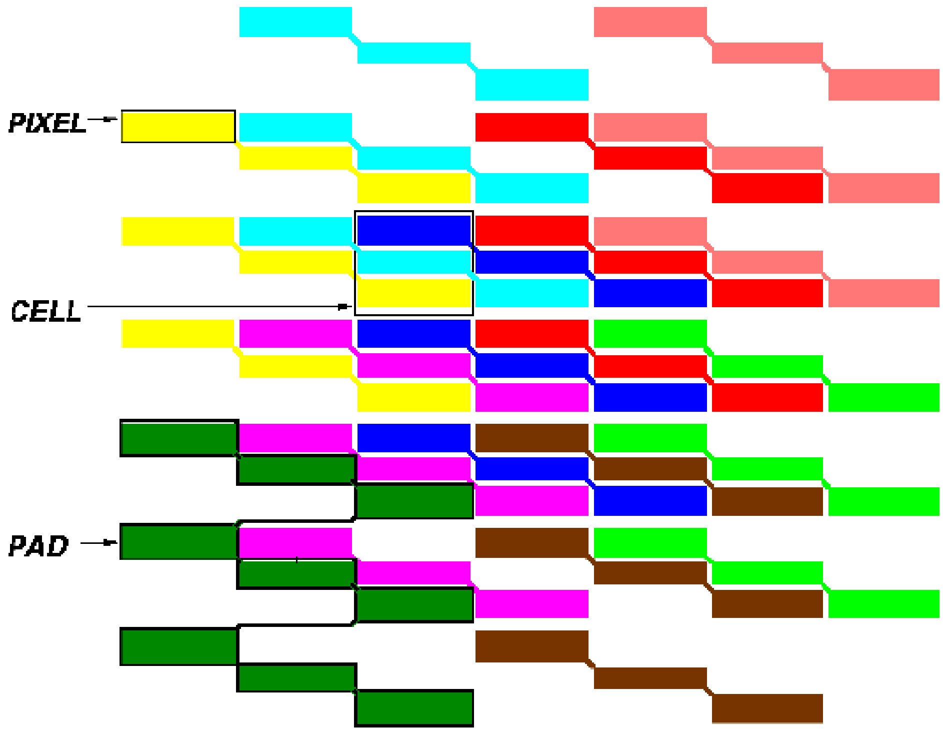
PC Hit Simulation (cont'd)

Example of test print file output:

```
 PC1 EVENT, TOTAL NUMBER OF HITS=  316

  HIT #  100001
   Sector 1
   Entry coordinates: -17.79199982 -0.2989999950 48.53699875
   Exit  coordinates: -17.78199959 0.3009999990 48.65200043
   Wire # at entry/exit:  8 8
   Landau charge: 0.8159443736
     Wire #   8   Q= .83091   Z=  48.594 (cell 165)  X= -18.110 (cell   8)
         Active track length:  0.6110035777
         Pads with induced charge > 3 sigmas of noise (0.002):
            Pad ( 3,164): Q= .00381
            Pad ( 3,165): Q= .11049
            Pad ( 4,166): Q= .11548
            Pad ( 3,167): Q= .11123
            Pad ( 3,168): Q= .00544
         Total induced charge= .34888, 42.0% of anode charge
```

Pixel Pad Cathode Pattern



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