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Subject: Re: Vertex Fitter in Fast simulation  
Posted by [Klaus Götzen](#) on Sun, 20 Apr 2014 06:35:08 GMT  
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Hi,

thinking a bit more about the approach of setting  $dE = dp$  for neutrals, there is some problem with the way it is done now I think.

Since E and p are 100% correlated quantities, the covariance cannot be diagonal if you set both at the same time. That has to be taken into account right from the beginning. However when the smearing is technically done in Fast Sim, it is in an uncorrelated way, so that E and p get an individual random modification.

I guess, a proper way would be for neutrals:

- Just set the dE in the detector classes.
- Chose a random smearing base on this dE value.
- Smear both E and p with this value.
- Set the according diagonal elemens for E and p and the correlated term  $\sigma_{E,p}$  in covariance matrix before transformation to  $p_x, p_y, p_z, E$  domain.

I'm not really sure whether this is the right way, but one could at least try like this.

Best and happy easter,  
Klaus