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Subject: Re: PID combiner with different detector  
Posted by [Ronald Kunne](#) on Tue, 05 Nov 2013 10:39:20 GMT  
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Your example is a bit off, as all the probas should add up to 1.

$p(\text{EMC}) = 0.9$  for electron, 0.025 for each of the others  
 $p(\text{MUO}) = 0.2$  for all particle.

Then we have:

$p(\text{EMC}) * p(\text{MUO}) = 0.9 * 0.2 = 0.18$  for the electron  
 $p(\text{EMC}) * p(\text{MUO}) = 0.025 * 0.2 = 0.005$  for the others  
This adds up to 0.2, so the final result is

$p(\text{EMC}) * p(\text{MUO}) = 0.18 / 0.2 = 0.9$  for the electron,  
 $0.005 / 0.2 = 0.025$  for each of the others, as expected.

Quote: If I see a band at 0.2 in PID with usage of global probability and many detector types, that means there are very poor information from all detector or are most likely ghost tracks and low energetic electrons.

Or particles falling outside the acceptance of the detector, or outside the momentum range  $0.2 < p < 5$  GeV/c for which the calculation was made.