Subject: Re: PID combiner with different detector
Posted by donghee on Tue, 05 Nov 2013 10:05:24 GMT
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Dear Ronald,

Now I am clear for the eqaul probability for absent PID info in certain detector.

If I use EMC and MUO, and an electron will identify with a single piece of detector as like
Pe(EMC) = 0.9 (90% probability at EMC)
Pe(MUO) = 0   (no infomation at MUO)

For other particles with EMC,
Pmu(EMC) = 0.1
Ppi,k,p(EMC) = 0.5

And for MUO detector, the probabilities will be reset as 0.2 even for all other particles.
Pe(MUO)   = 0.2
Pmu,pi,k,p(MUO) = 0.2

Then will calculate a global probability as like
Pe(EMC,MUO) = Pe(EMC) *Pe(MUO) = 0.9*0.2 = 0.18
Pmu(EMC,MUO) = Pmu(EMC)*Pmu(MUO) = 0.1*0.2 = 0.02
Ppi(EMC,MUO) = Ppi(EMC)*Ppi(MUO) = 0.5*0.2 = 0.1
Pka(EMC,MUO) = Pka(EMC)*Pka(MUO) = 0.5*0.2 = 0.1
Ppr(EMC,MUO) = Ppr(EMC)*Ppr(MUO) = 0.5*0.2 = 0.1
and so on.
After that will be normalized with
Pe(EMC,MUO) + Pmu(EMC,MUO) + Ppi(EMC,MUO) + Pka(EMC,MUO) + Ppr(EMC,MUO) = 0.5

So finally I can have normalized global PID probabilities
Pe(EMC,MUO) = 0.18/0.5 = 0.36
Pmu(EMC,MUO) = 0.02/0.5 = 0.04
Ppi(EMC,MUO) = 0.1/0.5 = 0.20
Pka(EMC,MUO) = 0.1/0.5 = 0.20
Ppr(EMC,MUO) = 0.1/0.5 = 0.20

This is a story of PID!
If I am wrong, correct me again.

Thanks,
Donghee