
Subject: DPM wrong coulomb/hadron elastic ratio

Posted by [Stefan Pflueger](#) on Wed, 19 Sep 2012 15:49:04 GMT

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Hello again,

while digging through the DPM code to resolve my disagreements for my studies regarding the luminosity monitor, I found yet another problem with the DPM generator. The numeric integral (riemann integral) used to calculate the coulomb part the elastic cross section is very imprecise, which then causes a wrong ratio between the coulomb and hadron cross section. The imprecision arises from the rather large stepsize for the integral compared to the dimension of the peak region of the coulomb diff. cross section. Instead of using the trapezoidal rule it now uses the simpson rule and the number of divisions has been increased. Additionally I distributed the intervals with $1/t$ to get higher precision in the low t range (only for the coulomb cross section). This gives the necessary precision for all of our beam energies.

I already contacted Aida Galoyan and passed her the relevant information.

Best regards,

Stefan
