NOvA-ART - Feature #2881

Handling of Birks suppression probably needs improvement

08/13/2012 06:48 PM - Ryan Patterson

Status:	Closed		**Start date:**	08/13/2012
Priority:	Normal		**Due date:**	
Assignee:			**% Done:**	0%
Category:			**Estimated time:**	0.00 hour
Target version:				

Description

FLSHits report the distance a particle traveled through a cell and the total energy lost during that journey. Dividing these numbers gives a average dE/dx for the particle, but dE/dx shoots up at the very end of the track, so the average dE/dx across the cell is a poor proxy for the net suppression for that cell. In fact, the way the numbers work out, I suspect that we get essentially no Birks suppression at the moment, since the turn-on is fairly non-linear.

Approaches to fixing this:
- have g4nova break up FLSHits when the instantaneous dE/dx changes too much
- have g4nova calculate Birks suppression internally in its stepping, with each FLSHit recording the net integrated suppression over the pathlength represented by that FLSHit (preferably in a separate field rather than via direct modification of Edep.)

History

#1 - 08/13/2012 06:48 PM - Ryan Patterson

- Subject changed from Handling of Birks suppression isn't great to Handling of Birks suppression probably needs improvement

#2 - 07/27/2014 09:21 PM - Ryan Patterson

Birks suppression was moved from PhotonTransport to g4nova recently, in part to remedy this issue. There may still be known limitations in the new implementation, but this exact Issue is technically resolved.

#3 - 07/27/2014 09:21 PM - Ryan Patterson

- Status changed from New to Closed

Closing.