

## Scatter Background:

		NC			CC		
		$\nu_e$	$\nu_\mu$ (p)	(np)	$\nu_e$	$\nu_\mu$ (p)	(np)
# of events		100k	100k		~90k	~500k	
		wgt					
1	All EVENTS	9.14M	8.91M		8.26M	40.7M	
2	SCATTERS Trigger, <b>lepton lost</b> , Pri angle < 200mr Pt < 250 GeV Mom > 1GeV	29.9k	26.7k		43.3k x <b>.25</b>	57.2k	
3	Cuts in 2 <u>AND</u> kink > 10 mr, IP to primary < 500 $\mu$	24.4k (163)	20.1k (127)		33.2k x <b>.25</b> (237)	49.4k (386)	
4	kinks per interaction: 3 1	.0027	.0022		.0010	.0012	
5	Correction for distribution in E800/E200/Bulk x .84 **	.0023	.0018		.00084	.0010	
6	# of int. of this type in 203						
	<b>Background :</b> 6*5						

SCATTER = first scatter on track,  $\Delta z < 5\text{mm}$

## \*\* E800/E200/Bulk correction

The MC used to generate kinks used only E800 modules. Corrections for other module types were made as follows.

The distribution of the kinks in the above sample (3):

Kink<sub>steel</sub> : .90  
Kink<sub>emulsion</sub> : .045  
Kink<sub>plastic</sub> : .050

The ratio of the average of amount of the media in 5mm of a track for E200 and bulk to the average amount of media for E800 ( assuming interaction in steel for E200 and E800)

	E200	Bulk
Ratio <sub>steel</sub>	1.37	0
Ratio <sub>emulsion</sub>	1.37	1.0
Ratio <sub>plastic</sub>	.34	6.5
Ratio <sub>i</sub> * Kink <sub>i</sub>	1.33	.33

The distribution of module type for the 203 interactions :

Mod<sub>800</sub> .30 (61)  
Mod<sub>200</sub> .31 (63)  
Mod<sub>Bulk</sub> .39 (79)

Global correction:

$$R_{\text{corr}} = R_{800} * (.30 + .31*(1.33) + .39*(.33)) = .84 * R_{800}$$

Note: For BULK interaction the same criteria for visibility in E800 is assumed. .33 is therefore an upper limit since lower momentum generated secondaries will be visible allowing identification of inelastic interactions. If only interactions (kinks) where no secondaries are produced are allowed in the bulk correction

$$\text{Ratio}_{\text{emulsion}} * \text{Kink}_{\text{emulsion}} \Rightarrow .13 \quad \text{and} \quad R_{\text{corr}} \Rightarrow .76$$

A more exact correction involves media distributions of individual events.