Scatter Background

Proceedure:

~100K nu-e and nu-mu prompt interactions (both NC and CC) were generated in with the MC.

1)The interaction vertices were forced to be in the steel sheets of the Period 4 configuration.
2) All particles from LEPTO were passed to GENT for propagation
3) Charged primary particles with an initial trajectory of <400 mr wrt. to the beam were "followed" for 1cm downstream of the interaction vertex.. In this 1 cm. region the trajectory of the primary tracks were recorded at the entrance and exit of the plastic bases of the emulsion sheets to simulate recorded segments.
4) Between each emulsion measurement all the secondary particles produced by the track were recorded.

The secondary particles produced are checked for "visibility":

angle < 400 mr
momentum such that the range is greater than 2 mm in steel.

The set of emulsion records were then searched for scatters and interactions A potential kink is only recorded if :

Along a track 1) NO visible secondaries between segments
2) angular deviation > 5mr

After end of track 1) only one visible secondary
2) angular deviation between visible secondary and last segment of track > 5mr

The data recode for each kink occurrence is

MC weight
delta phi, primary angle, distance from any previous kink ,daughter momentum, kink angle,
parent particle ID,
kink media,
distance from the vertex,
secondaries produced before kink,
visible secondaries produced before the kink,
kink type,
parent momentum,
trigger type for event,
flag if lepton is found or not,
primary tracks,
neutrino energy, z position of interaction (to within 10 microns),neutrino type,1^{st} 2^{nd} …etd

>>> This exists in NTUPLES and text format.

Scatter Background:

	NC Nu-e	nu-mu (p)		CC Nu-e	nu-mu (p)	
Fraction of events….						
w/ trigger	.92	.92			.99	
w/ 2 or more primaries	.87	.86			.95	
w / lepton lost	1.0	1.0			.22	
Product:	.794	.797			.206	
Average number of scatters within 5 mm	2.08	2.05			1.94	
Fraction of scatters on tracks with primary angle < 200 mr	.363	.362			.375	
Fraction of scattes with Pt > 250 MeV	.0140	.0125			.0178	
Product:	.0051	.0045			.0067	
Number of background kinks per interaction:	.0084	.0073			.0027	