simulation update

acceptance & yields

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Multipole Scattering Effects

- A charged particle traversing a medium is deflected by many small-angle scatters, mostly due to Coulomb scattering

- Gaussian approximation for the central 98% of the projected angular
- distribution, with a width

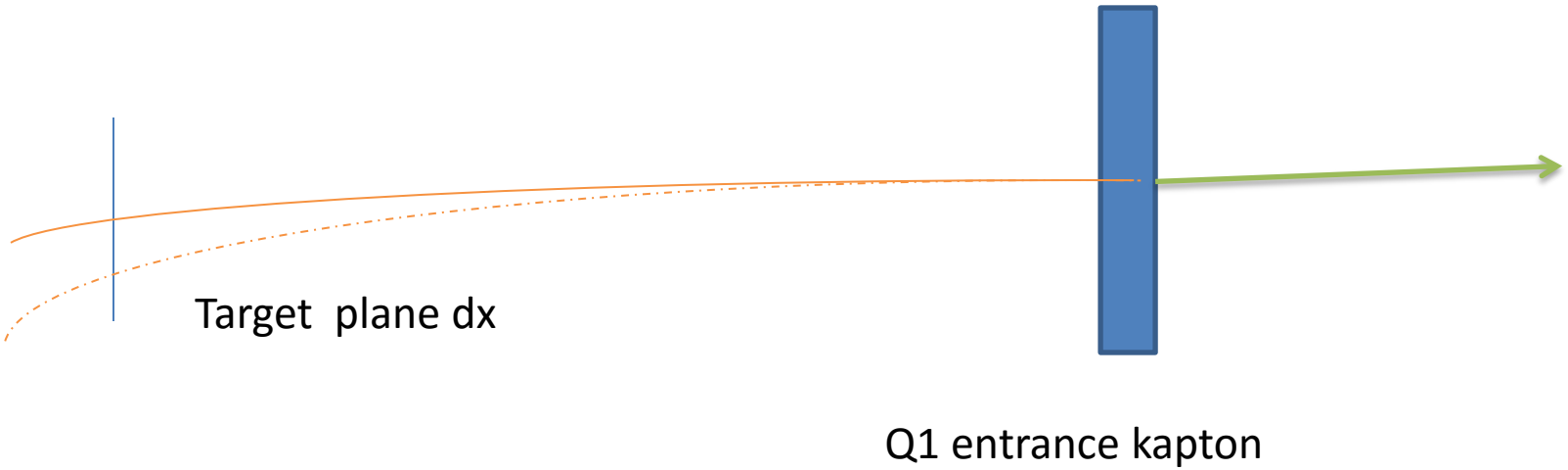
$$\theta_0 = \frac{13.6\ \mathrm{MeV}}{\beta cp}\, z\, \sqrt{x/X_0}\left[1 + 0.038 \ln(x/X_0)\right]$$

Multipole Scattering Effects-Q1 entrance

- Q1 entrance : Kapton, 0.0254cm

- 1GeV, $\theta_0 = 3.0e-4$;

- Assume target 2m away (although electron bended) deviation dx =0.6mm in target plane



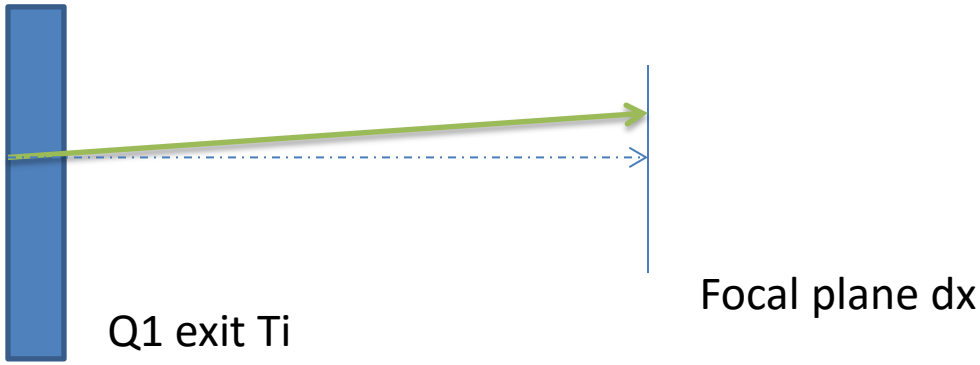
Multipole Scattering Effects-Q1 exit

- Q1 exit : Ti, 0.01016cm

- 1GeV, $\theta_0 = 5.6e-4$;

- Assume focal plane 3.57m away
  deviation dx =2.0 mm in focal plane

  Equal tgx=0.8mm or tgy=0.8mm from 1st order optics



Yields Drift – 2.2GeV, 2.5T Trans

Momentum /MeV	Material	Runs	Beam x/mm	Beam th/rad	Beam y/mm	Beam ph/rad	Exp. Yields	Simu. Yields	Accp Ratio
1003	8	3646	1.60	0.061	1.55	0.001	1	1	1
1003	8	3654	2.39	0.061	0.88	0.001	1.06	1.04	1
1247	7	3602	4.27	0.061	1.12	0.002	1.06	1.08	1.02
1247	7	3603	1.55	0.061	0.64	0.001	1	1	1
1441	7	3556	2.34	0.061	0.84	0.001	1.06	1.09	1.03
1441	7	3554	0.55	0.061	1.23	0.000	1	1	1
1792	7	3730	1.89	0.062	1.39	0.001	1.17	0.89	1.02
1792	7	3510	4.24	0.063	3.20	0.005	1	1	1
1927	7	3716	2.43	0.062	1.58	0.001	1.04	0.89	1
1927	7	3722	4.34	0.064	2.65	0.004	1	1	1
2072	7	3690	0.00	0.060	0.53	0.001	1	1	1
2072	7	3711	4.67	0.063	1.76	0.005	1.12	1.21	1.02
2072	8	3460	5.51	0.063	2.66	0.005	1.34	1.03	1
2072	8	3454	5.08	0.068	2.24	0.005	1	1	1

Yields Drift – 2.2GeV, 5T Long

Momentum /MeV	Material	Runs	Beam x/mm	Beam y/mm	Beam th/rad	Beam ph/rad	Exp. Yields	Simu. Yields	Accp Ratio
1885	8	5790	-0.49	0.000	-3.89	0.000	1.04	0.95	0.98
1885	8	5794	0.72	-0.001	-3.82	0.000	1	1	1
2049	7	5718	0.63	-0.001	-4.28	0.000	1.11	1.02	1
2049	7	5720	0.61	-0.001	-4.29	0.000	1	1	1
2227	8	5640	-0.33	0.000	-3.45	-0.001	1	1	1
2227	8	5652	0.34	0.000	-3.65	0.000	1.10	1.04	1.01
2227	7	5698							
2227	7	5700							

Note: run 5698, no bpm information

Yields Drift – 1.1GeV, 2.5T Trans

Momentum /MeV	Material	Runs	Beam x/mm	Beam th/rad	Beam y/mm	Beam ph/rad	Exp. Yields	Simu. Yields	Accp Ratio
1017	11	4791	3.51	0.117	-8.58	0.002	1	1	1
1017	11	4831	2.63	0.117	-7.28	0.001	0.97	0.96	0.97
809	14	5185	-0.61	0.118	-4.94	0.000	1	1	1
809	14	5281	0.52	0.119	-5.16	0.000	0.96	1.04	1.02
752	13	5204	-1.14	0.118	-5.58	0.000	1	1	1
752	13	5282	0.24	0.118	-5.50	0.000	0.95	1.05	1
583	12	4987	2.91	0.117	-5.30	0.001	1	1	1
583	12	4995	1.90	0.118	-4.32	0.001	0.96	0.95	1

Yields Drift – 1.7GeV, 2.5T Trans

Momentum /MeV	Material	Runs	Beam x/mm	Beam th/rad	Beam y/mm	Beam ph/rad	Exp. Yields	Simu. Yields	Accp Ratio
1589	7	4221	4.12	0.077	-1.25	0.004	1	1	1
1589	7	4240	2.55	0.079	-1.07	0.002	1.05	0.92	1
1494	8	4336	1.67	0.077	-1.03	0.004	1	1	1
1494	8	4564	2.17	0.078	-1.30	0.003	1.12	0.96	0.99
1405	8	4297	2.68	0.078	-1.39	0.002	1	1	1.
1405	8	4324	2.99	0.079	-0.17	0.003	0.97	1.03	1.01
1320	8	4350	1.50	0.078	-0.01	0.004	1	1	1
1320	8	4565	2.34	0.077	-1.74	0.003	1.08	0.98	1.01

Summary

Any suggestions?