UPDATE ON PVDIS BAFFLES AND PHOTON BACKGROUND

Rich Holmes July 23 2013 SoLID Meeting

PHOTON BACKGROUND AT LAST GEM AND ECAL

- Beam on target and DIS simulations
- Included beam line, target, baffles, GEMs, solenoid; virtual detector before 1st baffle in one run; ecal and Cerenkov in some
- Look at tracks crossing 4th GEM ("hits")
- Plot vertex positions, hit positions in GEM plane and ϕ (polar coordinate of hit) (relative to center of 12° segments)

CLEOVS BABAR

Realistic (lead) baffles and standard beamline (but note BaBar beamline is thinner)

Vertices for BG photons, GEM 4 CLEO standard baf + beam





Hit phi for BG photons, GEM 4 CLEO standard baf + beam



Tuesday, July 23, 13

Hit phi for BG photons, GEM 4 BaBar standard baf + beam





Tuesday, July 23, 13



ORIGINS OF ELECTRONS IN FIRST BAFFLE Virtual detector placed just upstream

ANGLEVS MOMENTUM

 $atan2(sqrt(px^*px+py^*py),pz):sqrt(px^*px+py^*py+pz^*pz) \\ (plane=:2110035& apld=:11& arpid=:11& asprt(px^*px+py^*py+pz^*pz) \\ (plane=:2110035& apld=:11& asprt(px^*px+pz^*pz) \\ (plane=:2110035& apld=:21& asprt(px^*px+pz^*pz) \\ (plane=:2110035& apld=:21& asprt(px^*px+pz^*pz) \\ (plane=:210035& apld=:21& asprt(px^*px+pz^*pz) \\ (plane=:210035& apld=:21& asprt(px^*px+pz^*pz) \\ (plane=:210035& apld=:21& asprt(px^*px+pz^*pz) \\ (plane=:210035& apld=:21& asprt(px^*px+pz^*pz) \\ (plane=:21& asprt(px^*px+pz^*pz)) \\ (plane=:21& asprt(px^*px+pz)) \\ (plane=:21& aspr$



RVS MOMENTUM

sqrt(x*x+y*y):sqrt(px*px+py*py+pz*pz) {plane==-21100358&pid==11&&mpid==11&&sqrt(px*px+py*py+pz*pz)>10}



VERTEX POSITIONS



REDUCING MOLLERS IN BEAMLINE, BAFFLE

WIDER BEAMLINE

REMOVE INNER RING





STANDARD CLEO BEAMLINE AND BAFFLES



WIDE (ALUMINUM) BEAMLINE, STANDARD BAFFLES





WIDE (ALUMINUM) BEAMLINE, STANDARD BAFFLES, NO INNER RING ON FIRST

Vertices for BG photons, GEM 4 CLEO standard baf (w/o ring) + wide beam



STANDARD CLEO BEAMLINE AND BAFFLES



KRYPTONITE CLEO BEAMLINE AND BAFFLES



WIDE (ALUMINUM) BEAMLINE, STANDARD BAFFLES, NO INNER RING ON FIRST



WIDE (ALUMINUM) BEAMLINE, STANDARD BAFFLES, KRYPT+NO INNER RING ON FIRST



50K E- DIRECTLY INTO GEM WITH CARBON IN FRONT



V BG AND e- EFFICIENCY

Real baffles & beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(%)
Plane	1	34483	18488	307	0.89
Plane	2	15619	6846	193	1.2
Plane	3	9820	5046	120	1.2
Plane	4	9399	4822	103	1.1

Krypt baffles, real beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(응)
Plane	1	24514	15849	99	0.4
Plane	2	8798	4919	59	0.67
Plane	3	5024	3550	36	0.72
Plane	4	4793	3418	32	0.67

Real baffles, krypt beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(%)
Plane	1	19947	15831	129	0.65
Plane	2	8725	5866	119	1.4
Plane	4	5396	3912	58	1.1

Real baffles, real wide beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(%)
Plane	1	22775	17814	228	1
Plane	2	10075	6479	114	1.1
Plane	3	7363	5152	69	0.94
Plane	4	7068	4944	76	1.1

Real baffles, krypt wide beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(%)
Plane	1	21276	17349	166	0.78
Plane	2	9038	6102	132	1.5
Plane	3	6597	4841	40	0.61
Plane	4	6394	4671	64	1

Krypt baffles & beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(%)
Plane	1	15965	15495	91	0.57
Plane	2	4635	4566	25	0.54
Plane	3	3436	3401	15	0.44
Plane	4	3314	3281	15	0.45

Real baffles, no inner ring, real wide beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(%)
Plane	1	22702	18505	192	0.85
Plane	2	9733	6711	106	1.1
Plane	3	7156	5359	67	0.94
Plane	4	6869	5117	75	1.1

Krypt 1st baffle, no inner ring, real wide beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(%)
Plane	1	19377	17557	191	0.99
Plane	2	7474	6116	101	1.4
Plane	3	5543	4755	38	0.69
Plane	4	5286	4539	48	0.91

Krypt 1st baffle, no inner ring, tungsten baffles, real wide beamline

		gamma	gamma	e-	eff
		(all)	(targ)		(%)
Plane	1	18677	17169	120	0.64
Plane	2	6856	5852	96	1.4
Plane	3	5262	4690	34	0.65
Plane	4	5021	4474	38	0.76