

Evaluation of Aug9 2mrad

- Use 2mrad extraction, version Aug 9, 2005
- <http://www.slac.stanford.edu/~yuri/ILC/Decks/>
- Use high statistics GP files
- http://www.slac.stanford.edu/~seryi/ILC_new_gp_files/
- Studied cases
 - 11 Nom. 500GeV CM
 - 14 Low P
 - 15 High Lum
 - 21 Nom. 1TeV CM
 - 23 Large Y
 - 24 Low P
 - 25 High Lum
 - 26 alternative High Lum
 - 27 alternative High Lum

- Losses computed by Turtle, its output is number of lost rays
- Assume that all lost rays have 25% energy (this may be accurate for QD0 but may give underestimate for other magnets)
- Losses on all magnets are shown in http://www.slac.stanford.edu/~seryi/ILC_new_gp_files/losses_ffextr_aug9.txt
- Below, will show only FD losses, up to first collimator
- Losses on QF1 not evaluated in details (complex geometry)
- Radiative Bhabhas not included – will add to losses
- Losses density (W/cm² or mW/g) not evaluated

Name	r (mm)	start (m)	end (m)	Apertures and position
QD0	35	4.5	7.0	
SD0A	88	8.2	12	
QF1	10	15.9	17.9	(pocket coil)
SF1	112	18.4	22.2	
ECOLLA	110	34.4	34.4	

Cases, offset (nm), losses (W)

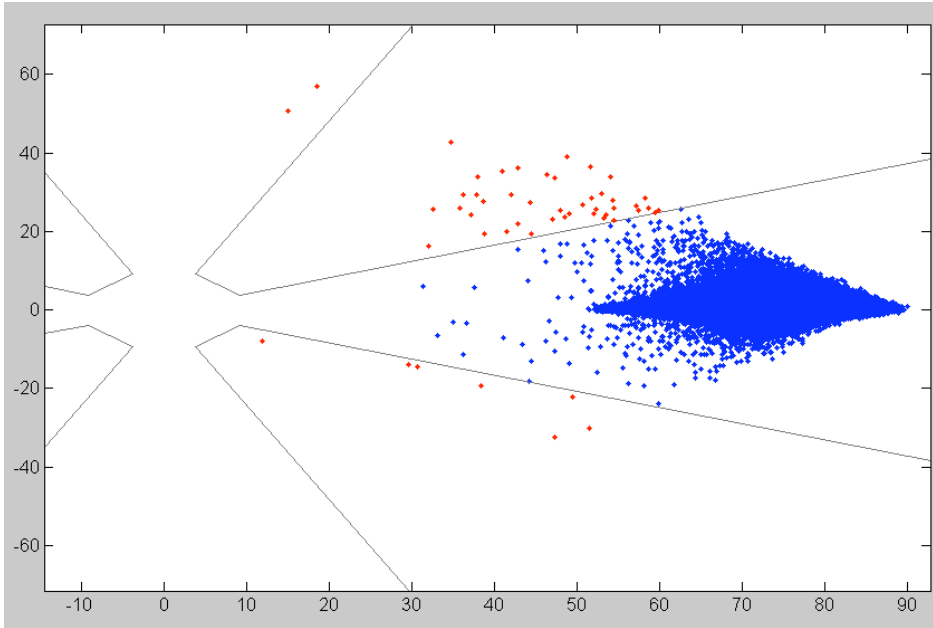
cs	dx	dy	QD0	SD0	SF1	ECOLL1
11	0	0	0	0	0	0
11	0	200	0	0	0	0
14	0	0	6.4	0	677	12.1
14	0	2	5.3	0.15	385	18.5
14	200	0	10.1	0	1306	12.1
14	200	2	7.6	0	744	20.4
14	400	0	10.7	0	1639	10.3
14	0	120	7.5	0.076	276	40.3
15	0	0	70.0	0.16	2177	109
15	200	0	102	0.16	3964	125
15	0	1.5	74.0	0.97	1782	189
15	0	120	94.7	3.07	564	498

Cases, offset (nm), losses (W)

cs	dx	dy	QD0	SD0	SF1	ECOLL1
21	0	0	0.51	0.51	0.25	24.8
21	0	100	1.3	1.3	0	122
23	0	0	13.4	3.4	59	175
23	0	4	1.5	1.0	0	72
23	200	0	17.3	1.03	317	150
23	0	280	0	0	0	8.0
24	0	0	914	40.8	23.9	2692
24	0	1.5	992	89	24.1	3860
24	200	0	1320	36.8	25.2	2920
24	0	120	1127	168	247	6503

Cases, offset (nm), losses (W)

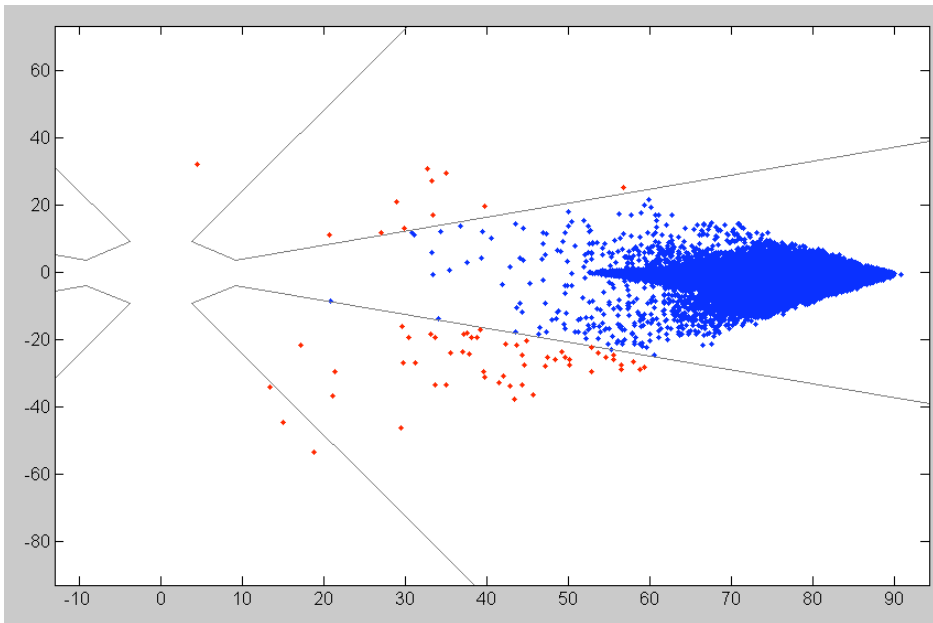
cs	dx	dy	QD0	SD0	SF1	ECOLL1
25	0	0	9378	380	312	17413
25	0	80	16927	1846	2408	47538
26	0	0	12.1	1.6	0.3	187
26	0	1.5	13.9	4.3	0.3	318
26	200	0	16.1	1.6	0.3	202
26	0	100	37.2	7.8	0.3	764
27	0	0	7.7	1.5	0.25	132
27	0	1.5	8.3	1.8	0.25	219
27	200	0	13.4	1.3	0.25	136
27	0	100	19.8	6.7	0.25	503



Losses on QF1
 51 or 65 particles from
 17452712

cs	dx	dy	QF1
14	200	2	5 W

(assume $\langle E \rangle$ of lost
 particles if 25%)



**Min energy (GeV) and
max angles (microrad)
of disrupted beam
(based on ~17e6
statistics) and max
angles of photons
(based on ~35e3
statistics)**

cs	dx	dy	Emin	X'max	Y'max	gX'max	gY'max
11	0	200	90.4	474	685	366	537
11	0	0	90.3	529	253	369	212
14	200	2	47.4	1072	642	638	398
14	200	0	55.0	1347	454	691	306
14	400	0	46.2	1208	570	791	338
14	0	120	46.0	1119	1190	684	918
14	0	2	50.0	1087	698	757	402
14	0	0	49.2	1104	580	668	344
15	200	0	40.3	1257	426	738	303
15	0	120	41.0	1280	1415	782	1232
15	0	1.5	38.0	1220	819	740	408
15	0	0	42.4	1271	431	723	320
21	0	100	93.6	423	566	279	408
21	0	0	89.3	469	165	262	144
23	200	0	76.9	875	478	646	276
23	0	280	113.	547	591	391	486
23	0	4	90.4	684	528	563	282
23	0	0	76.2	896	564	601	368
24	200	0	46.7	1495	358	759	289
24	0	120	45.5	1071	1436	671	1125
24	0	1.5	38.3	1381	641	738	376
24	0	0	46.2	1465	427	814	230
25	0	80	27.6	1731	1592	974	1200
25	0	0	31.5	2014	489	937	296

- Using criteria of loss in FD $< 10W$, preliminary look suggests that the 2mrad version August 9
- Seems to be fine with
 - Nominal 500GeV CM
 - Low Q 500GeV CM (not evaluated)
 - Large Y 500GeV CM
 - Low Q 1TeV CM (not evaluated)
 - Nominal 1TeV CM
- Seems to fail for
 - Low P 500GeV CM
 - High Lum 500GeV
 - Large Y 1TeV CM
 - Low P 1TeV CM
 - High Lum 1TeV CM
 - High Lum Altern.1 1TeV CM
 - High Lum Altern.2 1TeV CM
- One need to consider power density criteria as well