Study of e+ e- background due to beamstrahlung for different ILC parameter sets

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Research at lepton colliders Development of a detector For the ILC



What's it all about?





Waistscan



- Varying the Waist, from 0 - 600 $\mu\,m$

Waist scan at 500 GeV



Waist scan at 1 TeV



Tracking system



Subdetector	TESLA [9]	nominal	low Q	large Y	low P	high Lum
FTD 1	17	43	12	53	164	254
FTD 2	17	33	12	27	109	184
FTD 3	12	33	15	34	125	197
FTD 4	8	27	7	33	98	160
FTD 5	8	25	3	26	66	118
FTD 6	7	20	8	26	95	107
FTD 7	6	18	3	30	83	100
SIT 1	16	44	5	40	107	148
SIT 2	9	88	18	75	314	567
FCH (12 planes)	63	25	20	26	173	426
Total energy stored in:					100 m (100 m 100 m	
ECAL END [MeV]		49,8	29,3	91,9	425,1	1247
ECAL BARREL [MeV]		13	4,5	14	54,2	83

ECal

Background tracks in the TPC

High Naminal 55005000



Summary and outlook

- Waist parameter has been found for the different sets
- General pair production for 500 GeV and 1 TeV has been studied
- Detector background for 500 GeV has been simulated

<u>To do:</u>

- optimize the performance of MOKKA
- -> more simulations have to be done:
- larger background samples to decrease statistical fluctuations
- influence of crossing angle ? (2mrad, 20mrad or even 10-12 mrad???)
- What about 1 TeV ???: low P and high Lum seems to be very bad

Can the detector handle that? Are the physical processes influenced and how strong is this influence?

-> optimization of beam parameters for improved background - luminosity ratio







Vertex detector

