
Subject: Beamstrahlung cone opening angles
Posted by [robappleby](#) on Fri, 03 Dec 2004 11:05:08 GMT
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Enclosed in the calculation of the Beamstrahlung cone opening angles at the IP, which we are using for the photon clearances in the extraction line of the 2mrad horizontal crossing angle scheme.

We would value feedback, relative to the opening angles used for the NLC extraction line design.

File Attachments

1) [ELAN-Document-2004-21.ps](#), downloaded 1027 times

Subject: Re: Beamstrahlung cone opening angles
Posted by [mwoods](#) on Fri, 03 Dec 2004 21:25:11 GMT
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In the past NLC studies we have used ± 1 mrad (both x and y) as a neutral beam stayclear for designing the extraction line. Your results indicate this may be a little too conservative and could think about reducing to say ± 0.75 mrad. But would like to see the study done as well for e-e-collisions which can have larger disruption angles, especially in vertical (see for example, Table 3 in SLAC-PUB-10353) -- can you repeat your study for that case, just use the same incoming beam distributions and change the relative sign of the colliding beams?

Subject: Photon Beam Dump considerations for Headon or 2-mrad IR
Posted by [mwoods](#) on Sat, 11 Dec 2004 20:42:11 GMT
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Will there be discussion of photon beam dump considerations for the 2-mrad IR at the MDI Workshop?

This looks like a particularly thorny problem, since the incoming beam has to come thru the high power

(say 1-MegaWatt) beamsstrahlung photon dump. How is the engineering done for that? How are the stringent

vacuum requirements met? The TESLA design seems to have the incoming beam come thru a 1-cm radius beampipe thru a

10-meter long photon beam dump. Can SLAC's Conventional Facilities and Beam Dump Engineering experts consider this to provide comments at the MDI Workshop?
Some References:

TESLA studies:

http://tesla.desy.de/new_pages/hamburg_meeting_9_2003/pdf/wg2/waterdump_talk_16sep03.pdf considers dump for 18 MW/beam primary beam; 1.5-meter diameter and 10-meter length water; it doesn't consider photon beam dump

<http://accelconf.web.cern.ch/AccelConf/e00/PAPERS/THP5B07.pdf> considers the beamstrahlung photon dump for 250-GeV primary beam and 300-kW of beamstrahlung power; design only has 420-urad vertical beam stayclear; beam dump is 240 meters from IP; incoming beam comes thru 1-cm radius beam pipe thru the 10-meter long photon beam dump

http://tesla.desy.de/new_pages/TESLA_Reports/2001/pdf_files/tesla2001-14.pdf presents some vacuum considerations in beam delivery system

NLC Studies:

from NLC ZDR Chapter 11.A on "The Beam Dumps", see

<http://www.slac.stanford.edu/accel/nlc/zdr/Snowmass96/ZDRCH11.PDF> . This presents common beam dump for beam and beamstrahlung, for 16 MW/beam. Beam dump volume includes 1.5-meter diameter and 6-meter length water dump.

Subject: disrupted beam files

Posted by [robappleby](#) on Thu, 20 Jan 2005 16:06:36 GMT

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The large statistics disrupted beam files used for the 2mrad crossing angle study are now available at:

<http://flc.web.lal.in2p3.fr/mdi/extraction/disruptedbeam.htm>

This page includes the particle files for a 500 GeV and a TeV machine, along with the files for a TeV machine with 10^{10} bunch population and also some photon distributions.

Rob Appleby
