

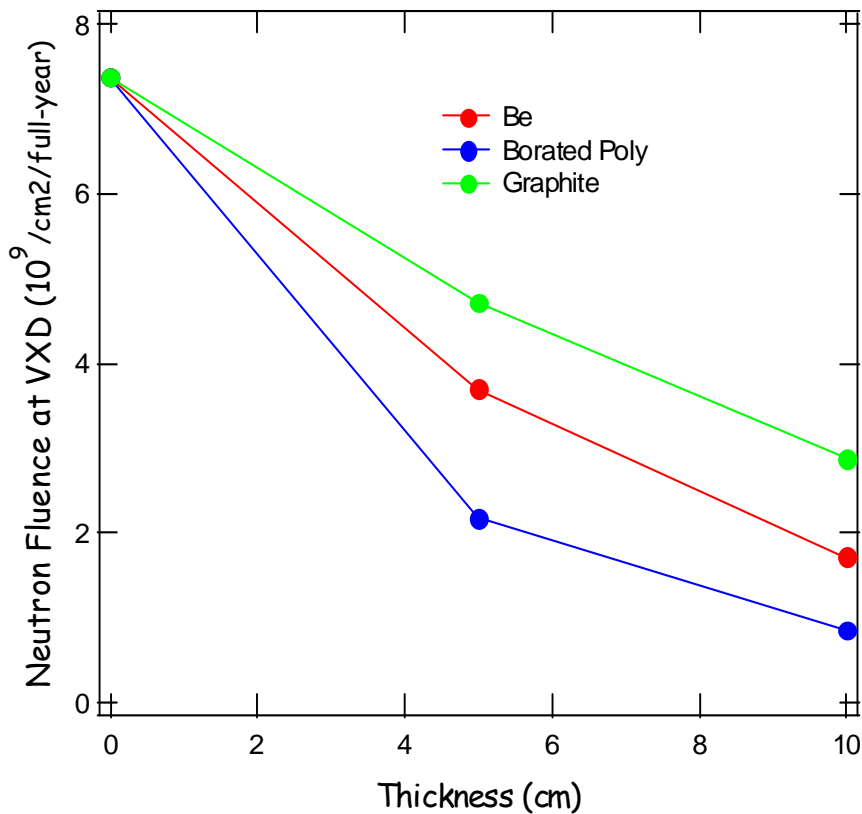
Minutes of April 28, 2008 SiD Forward Calorimeters Teleconference

Agenda:

1. SiD LoI - John
2. Background calculations - Takashi
3. Physics simulations - Uriel
4. Geometry - Bill C.
5. M.E. - Kurt
6. E.E. - Gunther
7. MDI - Tom.

John discussed the LoI timeline. Takashi has done a beautiful BeamCal neutron background study. He studied low Z material in front of the BeamCal: Be, Borated Poly, and Graphite - see below.

- Low Z layer in front of BeamCal to absorb low energy e^+/e^- coming out of BeamCal
- Nominal was 10 cm thick Be ($0.28X_0$)
- Other material to absorb neutrons as well



Material	Density (g/cm³)	X₀ (cm)	dE/dx (MeV/g cm⁻²)
Be	1.8	35.3	1.59
Graphite	2.0	18.8	1.75
Borated Poly	0.9	45.6	2.08

Our baseline was 10cm Be. Borated Poly is twice as good for the neutron background from Takashi's simulation. The main reason for the 10cm Be was to absorb by dE/dx low energy electrons/positrons coming out of the BeamCal. The dE/dx per g/cm² of Borated Poly is better than Be, because there are more protons and less neutrons. However, the density is less by a factor of 2. Therefore, 15cm of Borated Poly has the same ΔE, much greater neutron shielding, and slightly greater X₀ (0.33 vs. 0.28) as Be. This shouldn't be a problem as Uriel mainly ignores the first layers of the BeamCal for the SUSY physics he is studying. For the beam diagnostics function of the BeamCal, this change should also be acceptable. Therefore, I would propose going from 10cm Be to 15cm Borated Poly as the baseline, unless someone objects. Who will do this for the baseline - Uriel or Norman?

Uriel is doing great stuff on BeamCal physics simulations. Bill Cooper showed the BeamCal and LumiCal geometry. Tom pointed out that we need an overlap between the LumiCal inner edge and the BeamCal outer edge, which is certainly true! We need at least one Moliere radius, two would be better, if there is room, ie. the BeamCal outer radius should be increased. The question of longitudinal segmentation came up. From the FCAL web site (<http://www-zeuthen.desy.de/ILC/fcal/>), both BeamCal and LumiCal are 30 X₀ deep. The BeamCal has uniform longitudinal sampling every X₀. The LumiCal has greater sampling at the shower max. Only the Europeans are studying the LumiCal systematics within FCAL. I would suggest for the SiD LoI for simplicity that we just assume uniform longitudinal sampling every X₀ for both LumiCal and BeamCal, and I will put in the text that LumiCal systematics needs study, but the U.S. is short on simulation manpower. Kurt is working closely with Bill. Gunther described the BeamCal electronics plan. Either Angel or Angelo will give a presentation remotely at the FCAL Krakow Collaboration Meeting May 6, as will Uriel. Uriel is planning on visiting DESY Zeuthen to increase U.S. collaboration within FCAL, which is great! Tom discussed MDI. We decided to stay with R20, and say in words that we may have to increase it after further engineering studies. Respectfully submitted - Bill Morse.

The LoI section coordinators are:

SiD forward calorimeter overview - Bill M.
 BeamCal physics simulations - Uriel
 BeamCal mechanics - Bill C. and Kurt K.
 BeamCal beam diagnostics - Bill M.
 BeamCal electronics - Gunther
 LumiCal - Bill M.
 LumiCal mechanics - Bill C. and Kurt K.

LHCal - Bill M.

LHCal mechanics - Bill C. and Kurt K.

MDI, ie. R20, etc. - Tom