

Minutes of the 25th SiD optimization meeting

1-March-2015

Present:

Joel Goldstein (JG)

Richard Kriske (RK)

Tom Markiewicz (TM)

Christopher Milke (CM)

Aidan Robson (AR)

Jan Strube (JS)

Andy White (AW)

Fergus Wilson (FW)

Agenda and Points of discussion:

- Re-evaluating the Need for an anti-DID in SiD:
 - Detailed overview with background information on the current layout of the SiD forward layout. Studies on whether the anti-DBD field is needed to mitigate backgrounds in the detector have started again. Preliminary conclusion is that
 - without anti-DID, most of the energy from pairs already goes through the outgoing beampipe.
 - with anti-DID, still most of the energy, but now also most of the particles go through the outgoing beampipe. However, the DID field is currently slightly too small, so that the center of the distribution of the outgoing particles is slightly offset from the center of the outgoing beampipe. Tuning the strength of the anti-DID field would be easy, in simulation as well as in a detector.
 - without anti-DID, most particles that miss the beampipe hit the plug between the beampipes, while anti-DID causes more particles to miss the plug. Removing the plug between the beam pipes would reduce the sensitive area that could be used for physics, but it would prevent these particles from creating secondaries, which would increase background in the VXD and rad dose in BeamCal. Without plug and anti-DID, background in the VXD might actually be less than in current baseline. Removing anti-DID would make the engineering much easier.
 - Effect on physics impact of removing the plug has not yet been studied.
 - Effect on physics impact of reducing VXD background by removing the plug and the anti-DID has not yet been studied. Studying these backgrounds would require tracking the secondaries, which used to be done by Takashi Murayama in Geant3. This might be an opportunity for a new group to gain expertise in how to do that in Geant4
 - Wiggles in the B field indicate numerical instabilities. New B field from Wes Craddock should not have these instabilities any more.

- Crossing angle at ILC is still somewhat under discussion, however a crossing angle of 2 mrad would be necessary to get rid of the crab cavities.

- PNNL storage end-of-life issues for DBD samples:
 - A list of files that are exclusively available on a PNNL storage element that has reached its end-of-life has been posted to the indico agenda. They will be deleted by default. Please speak up if they are still needed.