

Minutes of WP-meeting 369

Attendance:

Zoom: Paul Colas, Ralf Diener, Ulrich Einhaus, Jochen Kaminski, Claus Kleinwort, Paul Malek, Jurina Nakajima, Shinya Narita, Huirong Qi, Oliver Schäfer, Ron Settles, Jan Timmermans, Keita Yumino

General News:

Jochen informed, that LCTPC was asked to give a talk at the next ILD strategy meeting on tracking. The status should be given shortly, but the main focus should be on the R&D needed for other projects like the CEPC or the FCCee.

Therefore, the discussion of the last WPmtg on the primary ions and IBF was continued. The main concern is the significant difference in luminosity for circular machines during the Tera-Z running. Here luminosities can reach up to $2 \times 10^{36} \text{ cm}^{-2} \text{ s}^{-1}$ (CEPC with 50 MW upgrade) or $1.9 \times 10^{36} \text{ cm}^{-2} \text{ s}^{-1}$ (FCCee), while both linear and circular colliders have a lower luminosity at higher energies (FCCee at W-threshold: $3.2 \times 10^{35} \text{ cm}^{-2} \text{ s}^{-1}$) or similar luminosities for both machine types at the Higgs-threshold $8 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ (FCCee) or $7 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ (ILC). Though the exact numbers for the luminosities vary in time and some presentations don't state if the cited numbers are for a single IP or all IPs, it is clear that circular machine have a factor of 1000 higher instantaneous luminosities than linear one at $E_{CM} = 90 \text{ GeV}$, and lower backgrounds.

The issues of ion density and track distortions were already discussed in 2014 by Philippe Schwemling in the context of TLEP. His presentation has been uploaded to the indico page. It states that the track distortions for TLEP ($L = 5.6 \times 10^{35} \text{ cm}^{-2} \text{ s}^{-1}$) should be of the similar order as at the ILC.

A potential solution could be the use of neon instead of argon. Here the primary ionization is lower and the ions drift faster. However, the electrons have a larger diffusion and lower drift velocity still degrading the performance of the detector.

Important for a solid result is a detailed knowledge about the backgrounds, which have to be done for CEPC and FCCee, so that the ion densities and the track distortions can be recalculated.

Additional issues, that were mentioned for the ILD strategy meeting, are the power pulsing and 2T running at the Tera-Z. Therefore, dedicated R&D on intrinsic IBF reduction and/or static ion suppression is necessary.

The central tracking talk planned on the 19th was supposed to be given by Ivan Vila, who could not be available. Then it was decided to ask Marc Winter to give a general talk on CMOS, but he also could not be ready for this date.

PCMAG/LP setup, test beam:

Ralf: Test beam schedule:

- Ralf mentioned that the new call for test beams is out.

News from the groups:

Paul and Daniel Jeans from KEK are setting up a co-directed PhD thesis on Micromegas TPCs for Jurina Nakajima.

AOB:

The next workpackage meeting will take place on April 21st.