

8. Annual MT Meeting



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Type: **Parallel talk**

Time-of-Flight: From LGADs to Physics

Monday 26 September 2022 16:30 (20 minutes)

In recent years, the measurement of the time-of-flight (TOF) of charged particles has been identified as opportunity for particle identification (PID) at the future Higgs factories (FHF) currently under discussion by the international community, including the recently updated European Strategy for Particle Physics. TOF would in particular allow to identify charged hadrons at low momenta, complementary to PID via dE/dx or dN/dx in gaseous subdetectors or via Cherenkov light.

This talk highlights recent results from Low Gain Avalanche Diodes (LGAD) timing measurements that provide a resolution of a few 10 ps. Furthermore, it lays out the algorithmic implementation of TOF in a FHF detector, using the International Large Detector (ILD) as an example, in order to understand different use-cases and underlying limitations. This is complemented by an assessment, where TOF can be useful for the physics case at a FHF and what performance would be necessary for this.

Presenter: EINHAUS, Ulrich (FTX (Fachgruppe SLB))

Session Classification: Detector Technologies and Systems