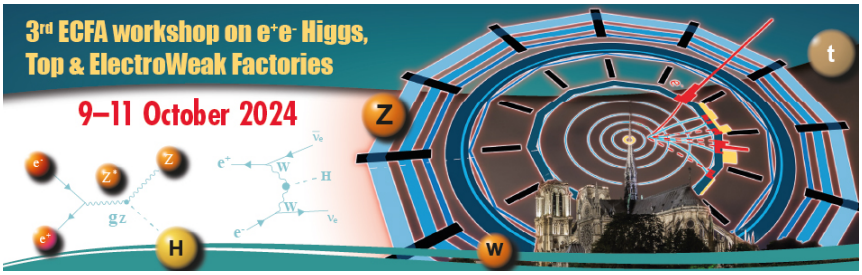

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Preshower simulation of IDEA detector

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The IDEA detector has been selected for the FCC due to its innovative design, featuring a central tracker enclosed in a superconducting solenoidal magnet, a Preshower detector, and a dual readout calorimeter. In the IDEA detector, the μRWELL technology; a single-amplification stage resistive Micro Pattern Gaseous Detector (MPGD), based Pre-shower and muon detectors are integrated with modular design of active tile area 50 × 50 cm2 and pitch width of 400μm. The H ⟶ γγ decay is a favorable channel to detect H which is the primary function of the electromagnetic calorimeter (ECAL). But the false signal from the short-lived neutral π0 decay into low energy photons can be picked as an H signal when it decays into two closed low energy photons which collectively result in a high energy register in ECAL. This limitation can be resolved by a fine-granular Pre-shower, which can distinguish between two extremely close, low-energy independent photons and hence contribute to minimizing uncertainty in H physics. The endcap and barrel Pre-shower are placed before the ECAL to overcome this deceptive signal problem.
The current talk presents the status of the Preshower's uni-layer barrel having 32 sides and endcap implementation for the IDEA detector using DD4hep in k4geo. Future directions for endcap detector geometry builders are also suggested, along with a Preshower design potential discussion to prevent conflicts with dual readout calorimeters.

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