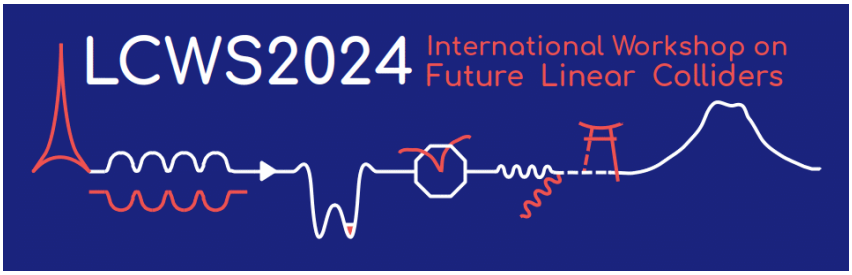

Contribution ID: **111** Type: **Oral presentation (remote)**

Monte Carlo Simulations of an electromagnetic sampling calorimeter with semiconductor sensors

Wednesday 10 July 2024 17:00 (20 minutes)

The simulation of particle generation, their interaction with detector materials, and the resulting detector response has become increasingly crucial in recent experiments. Semiconductor+W calorimeters, known for their high compactness and granularity, are integral components of proposed detector designs for upcoming Higgs Factories as well as experiments targeting strong-field-QED (LUXE) or forthcoming smaller-scale experiments. This contribution focuses on optimizing the ECAL electromagnetic calorimeter, foreseen to the LUXE experiment to achieve higher energy resolution, using a Geant4-based application. Additionally, a fundamental aspect of this effort involves simulating the responses of Si or GaAs -type sensors. This simulation not only contributes to the initial detector design but also serves as an indispensable tool for predicting the detector's performance. Incident electrons with energies ranging from 2.0 to 18.0 GeV were directed towards ECAL surface, their interactions with materials assesed and the results are presented. Furthermore, detailed configurations of the sampling electromagnetic calorimeter and the Geant4 simulation package are discussed.

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