

# HiDRa - High-resolution Calorimeter for $e^+e^-$

*Saturday 20 July 2024 14:30 (17 minutes)*

The forthcoming generation of  $e^+e^-$  colliders demands advanced mass resolutions for the Higgs ( $H$ ),  $W$ , and  $Z$  bosons when decaying into jets. Dual-readout calorimetry achieves this by making use of two independent energy readings of the hadronic shower, leveraging the distinct  $e/h$  factors of Cherenkov and scintillation light produced in a calorimeter equipped with two types of optical fibres. This allows for event-by-event compensation of the electromagnetic fraction.

In this context, we present HiDRa, a  $65 \times 65 \times 250 \text{ cm}^3$  dual-readout fibre calorimeter prototype currently under construction. The primary objective is to assess the performance in terms of linearity and resolution when exposed to a high-energy hadron beam. The talk will focus on strategic choices made to offer scalable solutions for the mechanics and readout electronics. The insights gained from the evaluation of HiDRa will be key for the construction of a full  $4\pi$  calorimeter at a future  $e^+e^-$  collider.

## Alternate track

### I read the instructions above

Yes

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