

Development of a “Maximum Information” Crystal Calorimeter for future Higgs Factories

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While the Large Hadron Collider and its detectors are preparing for major upgrades in view of the high luminosity frontier, the high energy physics international community has started to look beyond the LHC. As recognized by the 2020 European Strategy Particle Physics Update, the pursuit of an electron-positron collider is one of the top priorities to study in detail the properties of the Higgs boson and thus a coordinated R&D effort to develop the next generation of detectors has started.

In this context, a new detector concept, which aims at maximizing the information collected by an electromagnetic (EM) calorimeter section based on homogeneous crystals with state-of-the-art energy resolution, high granularity and embedding dual-readout capabilities (simultaneous measurement of Cherenkov and scintillation light produced in the crystal) has recently been proposed [1].

In this contribution we will present the conceptual design of such a “Maximum Information Crystal Calorimeter”(MAXICC), its performance in reconstructing multi-jet events [2] and first results from the ongoing R&D to identify the optimal crystal, filter and SiPM candidates through laboratory measurements and beam tests.

Collaboration

Role of Submitter

I am the presenter

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