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Homogeneous Hadron Calorimetry for a Future Higgs Factory

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At a future Higgs factory, detectors providing ultimate resolution will be required. A limitation to date has been the measurement of hadronic energy, this in contrast to the measurement of electromagnetic energy. Total absorption electromagnetic calorimeters made of inorganic crystals provide the best energy resolution and detection efficiency for the measurement of photons and electrons and are the media of choice when high resolution is required. To obtain the best hadronic energy resolution the concept of a homogeneous calorimeter will be introduced, featuring total absorption for electrons, photons and jets. Its totally active medium collects the full signal, produced over a very large volume while preserving spatial information, and allows event-by-event correction for binding energy losses. Inorganic scintillator-based calorimeters are a practical solution with several possible techniques available for compensation of the binding energy losses by either dual readout and/or dual gate. The concept of total absorption calorimetry will be described with its projected performance

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