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Scintillating fibre calorimetry at the LHC

Proposal

The SPACAL Collaboration

Amsterdam - Cagliari - CERN - Ecole Polytechnique - Lisbon - Naples
Paris VI - Pavia - Rio de Janeiro - San Diego - Weizmann Institute

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Abstract

In the past $2\frac{1}{2}$ years, the SPACAL Collaboration have developed the compensating lead/scintillating fibre calorimeter technique from its conceptual stage towards a mature technology allowing the construction of high-precision particle detectors. Recently, we tested a 20-ton prototype calorimeter containing 176,855 scintillating fibres. Based on its excellent performance, we believe that this detector has the potential of meeting the exceptionally difficult requirements needed for successful LHC experiments. Therefore, we propose an R&D programme for studying in detail the aspects that are relevant for application of this type of detector in an LHC environment, including its integration in a larger system of detectors.