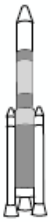

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Scintillator development for future light-based calorimeters

Scintillator based calorimeters have proven to give excellent performance since many decades. Calorimeters at future HEP experiments will face stringent challenges in terms of radiation tolerance, energy and time resolution. Ultra-fast radiation-hard materials are required for future experiments in high radiation environments such as HL-LHC and FCC hh. Materials must sustain radiation levels of up to 1 MGy and achieve a time resolution better than 30 ps in order to cope with very the expected high event rates. Therefore R&D is required for both organic and inorganic scintillators materials to improve radiation hardness, reduce the decay time of the scintillation signal, and investigate various fast light emission processes such as wideband semiconductor nanomaterials, cross luminescence and Cherenkov light. It is also important to consider cost-effective production methods. This presentation will review recent developments in the field of scintillator materials for future calorimeters, as well as concepts for novel detectors.

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