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Scintillation detectors in modern high energy physics experiments and prospect of their use in future experiments

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The scintillation detectors (SDs) based on organic plastic scintillators (OPS) are one of the basic detectors in HEP experiments. The technologies of OPS production as bars (strips) and tiles, their optical and physical properties, light collection based on wavelength shifting (WLS) fibers coupled to multi-pixel vacuum and silicon PMs are presented. SDs are multifunctional i.e. calorimeters, triggers, tracking, time-of-flight and veto-systems are examples of their field of applications. The use of SDs in many HEP experiments on the searching for quarks, new particles and H-bosons (D0, ATLAS and CMS), quark-gluon plasma (ALICE), CP-violation (LHCb and KLOE), ν-oscillation (MINOS and OPERA), and cosmic particles (AMS-2) are discussed. SDs still holds great promise for future HEP experiments due to such properties as high segmentation, WLS fiber light collection and multi-pixel silicon PMs.

Biography

Yuri Kharzeev has completed PhD in Physics & Mathematics in 1979 from Moscow Engineering and Physical Institute (State University, Moscow). He is Senior Researcher of Dzhlepov Laboratory of Nuclear Problems. He has published more than 200 articles in referred journals. Themes of his articles are mainly associated with Cherenkov and Scintillation counters, Mini-Drift Tubes (Jarocchi tubes) and e.a. which were used in the Experiments on High-Energy Physics in HYPERON (IHEP, Protvino), COMPASS-II(CERN), D0-II (Fermilab)). He is a member of Mu2e Collaboration.

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