

Innovative and flexible radiation monitoring systems for high-energy experiments

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In present and future collider high-energy experiments, the increase of radiation level represents a crucial issue to be carefully monitored for understanding of the beam-induced background, replacement of detector parts and the overall experiment lifetime. In this work we present two different and very flexible radiation monitors. The first one is based on single crystal CVD diamond sensors, which allows an accurate measurement of instantaneous and integrated dose. This system is able to detect sudden large increase of doses and to implement beam abort features as experienced within Belle II experiment. A second method is based on an innovative optoelectronic instrumentation that is able to read in real-time the changes of optical properties of the radiochromic film due to the darkening induced by ionizing radiation. The simultaneous use of two dosimetric systems has been tested in electron and gamma radiation environment showing its complementary features, accuracy, radiation hardness

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