

Comparison of Silicon, Germanium and Diamond Sensors for Using it in HEP Detector Applications

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Silicon detectors are widely used in High Energy Physics Experiments for high precision tracking and reconstruction of primary and secondary vertices with good resolution. These detectors are close to the interaction points so they suffer very high fluence of particles and can be infected with radiation damage which can cause in the reduction of signal to noise ratio which is a very important quantity. In this talk We will compare some of the important quantities of Si, Ge and diamond and will try to investigate which one will be better for future collider experiments, where the luminosity and energy of the collision will be very high. I will also show the results on growth of diamond film and testing of the films and will compare the following properties of the detector material.

1. Energy loss, charge for MIP
2. Noise levels in Si, Ge and Diamond
3. Material Budget of materials (Multiple scattering)
4. Radiation damage of sensors simulated in fluka
5. Capabilities of Particle Identification

Presentation type

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