

Development of position-sensitive silicon detector for ILC calorimeters

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Position-sensitive silicon detector (PSD) is a silicon pad sensor with resistive surface connecting to electrodes on corners of the cell. PSDs are widely used in laser optics, and also used as detectors for heavy ions, while the application to particle physics has been limited to smaller signal due to smaller energy deposit, which degrades position resolutions. We are investigating PSD for MIPs with thick silicon sensors (650 μm) to be used as sensors at innermost layers of highly-granular calorimeters to improve pointing resolution of incident particles. Basic measurements of the prototype sensors with lasers and radioisotopes will be presented. Application to ILC calorimeters, and further possibility to include an avalanche layer to improve the position resolution will also be discussed.

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