

# SDDs for high-rate and high-resolution electron spectroscopy

A.Nava, M.Biassoni, S.Pozzi, M.Carminati - 15th Pisa Meeting on Advanced Detectors

SDDs are fast detectors with an energy resolution close to Fano limit in Silicon → used for X-ray spectroscopy

Electron spectroscopy is challenging → electrons can be backscattered and lose energy in the SDDs dead layer

- We have developed a model by combining a **Geant4 Montecarlo simulation** with an empirical description for the dead layer
- This model has been tested by fitting monochromatic and collimated electron spectra from a SEM, finding a good agreement

Applications:

- **Sterile neutrino search with KATRIN** → a fast and high-resolution detector is needed to measure the entire Tritium  $\beta$  spectrum searching for a kink
- **Validation of nuclear models** → forbidden  $\beta$  spectra are sensible to the used nuclear model as well as to the chosen  $g_A$  value

