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Si-detector based beta-spectrometer

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We present the layout and specifications of the beta-spectrometer based on two silicon detectors: the thick full-absorption detector (SiLi) and the thin transmission detector (Si). The described technique involves both detectors operating in a coincidence circuit. The described setup provides the effective separation of the electron spectrum from the collateral x-rays and gammas of a given nuclide.

The spectrometer is designed for the task of high precision shape measurements of various beta-spectra. In particular, it was used to study the shape of 144Pr beta-spectrum, which is considered to be the most promising antineutrino source for the search of sterile neutrino oscillations.

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