

Potentialities of Quasi-Hemispherical CdZnTe Detectors for Hard X-ray Spectroscopy of Kaonic Atoms

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In this work, we will present the potentialities of new quasi-hemispherical CZT detectors, recently developed at IMEM- CNR Parma (Italy), for high-resolution X-ray spectroscopy of kaonic atoms. Kaonic atoms are formed when a K⁻ is moderated inside a target until it reaches a low enough kinetic energy to be stopped, replacing one of the outer electrons and forming an exotic atom in a highly excited state. Precise and accurate measurements of the radiative X-ray transitions can provide information about the kaon nucleus interaction. In the framework of SIDDHARTA-2 and WP26 JRA8-ASTRA collaborations, we developed new quasi-hemispherical CZT detectors for measurements of hard X rays from kaonic atoms (> 20 keV). The detectors are characterized by good room temperature performance, with energy resolution FWHM of 3 % (3.7 keV) and 1.4 % (9.3 keV) at 122.1 keV and 662 keV, respectively. Preliminary tests at the DAΦNE collider in Frascati (Italy) will be also presented

Summary

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