

A coincidence Ge (Li) - Ge (Li) gamma-ray polarimeter
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A coincidence system including coaxial Ge (Li) detectors of 34 and 25 cm³ sensitive volume was built for measurements of linear gamma ray polarization. It is based on the Compton scattering of incident gamma rays from one detector into the other¹. The polarimetric sensitivity of the system was determined for 543, 580, 690, and 750 keV photons. It was found to be closely 0.75 of the theoretical sensitivity for each gamma-ray energy. The ratio of the detection efficiency of the system to the detection efficiency of the 34 cm³ Ge (Li) detector for 662, 1173 and 1332 keV gamma rays was found to be 0.73, 1.04 and 1.11%, respectively.

At 662 keV the energy resolution in the sum spectrum was 4 keV, and the time resolution 26 nsec. Due to these properties and a very good peak to the Compton ratio the system has many applications.

References

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