For gamma-ray spectroscopy a large depletion region is required for complete charge collection and increased efficiency. Here for a given reverse bias voltage, the value of $N$ needs to be reduced as much as possible. The high-purity germanium detectors that are being manufactured today can achieve net impurity concentration as low as $0.8 \times 10^{10} \text{cm}^{-3}$. $E_g$ is the band gap energy. High-purity Germanium (HPGe) detectors. Germanium detectors are semiconductor diodes having a p-i-n structure (P-type contact, intrinsic layer, and N-type contact), in which the intrinsic (i) region is sensitive to ionizing radiation, particularly x-rays and gamma rays. Under reverse bias, an electric field extends across the intrinsic or depleted region. Article contents. Abstract. IAU Colloquium 115: High Resolution X-ray Spectroscopy of Cosmic Plasmas. Published online by Cambridge University Press: 12 April 2016. Article. A High Spectral Resolution Observation of the Soft X-Ray Diffuse Background with Thermal Detectors. The Astrophysical Journal, Vol. 576, Issue. 1, p. 188. Cosmic rays are high-energy protons and atomic nuclei that move through space at nearly the speed of light. They originate from the sun, from outside of the solar system in our own galaxy, and from distant galaxies. Cosmic rays were discovered by Victor Hess in 1912 in balloon experiments. Direct measurement of cosmic rays, especially at lower energies, has become possible since the launch of the first satellites in the late 1950s. Particle detectors similar to those used in nuclear and high-energy High-resolution hard x-ray spectroscopy of high-temperature plasmas using an array of quantum microcalorimeters. Authors: Daniel B Thorn Ming F Gu Greg V Brown Peter Beiersdorfer F Scott Porter Caroline A Kilbourne Richard L Kelley. Rev Sci Instrum 2008 Oct;79(10):10E323. Lawrence Livermore National Laboratory, Livermore, California 94550, USA. Quantum microcalorimeters show promise in being able to fully resolve x-ray spectra from heavy highly charged ions, such as would be found in hot plasmas with temperatures in excess of 50 keV. Quantum microcalorimeter arrays are able to achieve this as Start by marking "High Resolution X-Ray Spectroscopy of Cosmic Plasmas: IAU Colloquium 115" as Want to Read: Want to Read saving… Want to Read. Currently Reading. Read. High Resolution X-Ray by International Astronomical Other editions. Based on the major papers and reviews presented at the International Astronomical Union colloquium held at the Center for Astrophysics in 1988. A comprehensive review of X-ray studies of cosmic plasma. It will be of interest to professionals working in X-ray astronomy, radio astronomy, emission mechanisms and the interstellar medium. Get A Copy. Amazon.