

Detection Principles and Fabrications of Superconducting Transition Edge Sensors

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Superconducting transition edge sensors (TES) have been demonstrated their extreme sensitivities in many applications, which require a high energy resolution. The sharp resistance change of a superconducting film at the phase transition provides a powerful resolution of temperature change. When a particle is stopped in a metallic absorber its energy is transferred into a form of thermal energy raising the temperature. The measurement of the resulting resistance change of TES film determines the initial energy transfer. In the present talk, the detection principles of the TES operation are summarized together with the performance recently fabricated at KRISS. Design considerations and fabrication techniques are also discussed in detail.

Keywords : superconducting transition edge sensor, x-ray and gamma-ray detection