

Development of Superconducting Tunnel Junction Far-Infrared Photon Detector for Cosmic Background Neutrino Decay Search - COBAND experiment

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We present the status of development of the Superconducting Tunnel Junction (STJ) detector for the COsmic BAcground Neutrino Decay search (COBAND) experiment. The signal of the cosmic background neutrino decay is identified as a sharp cutoff at high energy end in a far-infrared region ranging from 15meV to 30meV in the energy spectrum of the photons from the space[1]. The COBAND experiment will be done as rocket and satellite experiments in order to detect the far-infrared photons from the space. For a photon detector of the COBAND experiment, we are developing the STJ detectors[2][3]. We will use a combination of the diffraction grating and the array of Nb/Al-STJ pixels with cryogenic amplifier for the rocket experiment[4], and use Hf-STJ as a micro-calorimeter[5] for the future satellite experiment. The present status of the detector R&D and the experimental design for the COBAND experiment is reported in more detail.

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