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Detection techniques for neutrinos and high energy astrophysics

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In these last decade two researches at the frontiers of the particle physics and high energy astrophysics are unexpectedly moving along the cutting edge of the same detector technology. At one side precision the experiments on the direct search for absolute neutrino mass as well as detection of relic neutrinos or the search for its magnetic moment, at the other side the searches for hottest large scale gas structure of the universe and the most energetic processes in the neighbourhood of the black holes. Those investigations with a widespread effort from different communities are now connected by the same detector technology: the low temperature detectors.
These are arrays of small superconducting sensors (TES) that operated at about 0.1K as micro-calorimeters can detect heat pulses from nuclear decays as well as x-ray absorption. The impressive spectral performance of about 1 eV at 3 KeV, the very low threshold and the large choice of sensing material make them unique detector for the next neutrino precision experiments and the next large mission in astro-physics.

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