

Supernova Registration in Water Cherenkov Veto of DarkSide-20k Dark Matter Detector

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Registration of supernova neutrinos is one of the main goals of large underground neutrino detectors. We consider the possibility of using the large 2 kT water veto tank of DarkSide-20k dark matter detector as the additional facility for future Supernova detection. Simulations were performed for registration of cherenkov light in water tank from high energy positrons created by supernova electron antineutrinos via inverse beta decay reaction. The expected number of events and their energies for standard galactic Supernova is compatible with the information extracted from the neutrinos from Supernova 1987a. Comparison between characteristics of different supernova neutrino detectors are presented.

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