

SIMULATION OF THE LSD RESPONSE TO THE NEUTRINO BURST FROM SN 1987A

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Using the Geant4 code, we have performed [1] a thorough simulation of the LSD detector response to the neutrino burst from SN 1987A. The neutrino flux parameters were chosen according to one of the models: the standard collapse model or the rotational supernova explosion model [2]. We showed that, depending on the chosen parameters, one can either obtain the required number of pulses in the detector or reproduce their energy spectrum, but not both together. The interaction of neutrino radiation both with LSD itself and with the material of the surrounding soil was taken into account in our simulation. We also explored the hypothesis [3] that the entire unique LSD signal at 2:52 UT was produced by neutron fluxes from the surrounding granite. However, this hypothesis was not confirmed by our simulation.

The speaker is a student or young scientist

No

Section

1. Neutrino physics and nuclear astrophysics

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