ICRC 2025 - The Astroparticle Physics Conference



Contribution ID: 112

Type: Poster

Supernova neutrinos monitoring with the LVD experiment

The Large Volume Detector (LVD) at the INFN Gran Sasso National Laboratory, Italy, is a neutrino observatory designed to study low energy neutrinos from gravitational stellar collapses. The detector features 1000 tons of liquid scintillator and is sensitive with full efficiency to core-collapse and failed supernovae occurring in the Galaxy through neutrino burst detection.

In this communication we review methods for the neutrino burst search and we update the results of the second run, lasting from 2014, January 1^{st} to 2025, Jan 16^{th} for a total live time of 4013 days.

In the lack of a positive observation in this dataset and in previously published results since 1992 for a total live time of 11347 days, we set an upper limit to the rate of core-collapse and failed supernovae in the Galaxy of 0.07 year⁻¹ at 90% c.l. .

Collaboration(s)

LVD Collaboration

Authors: Dr VIGORITO, Carlo Francesco (University & INFN, Torino, Italy); Dr MOLINARIO, Andrea (OATo INAF & INFN Torino, Italy)

Co-authors: Dr BRUNO, Gianmarco (INFN-LNGS, Italy); Dr FULGIONE, Walter (INFN-LNGS, Italy)

Presenter: Dr VIGORITO, Carlo Francesco (University & INFN, Torino, Italy)

Session Classification: PO-2

Track Classification: Neutrino Astronomy & Physics