

# High Energy Neutrino from Supernovae

## Executive Summary

- **ABOUT:** Correlation between optically detected Supernovae and High-Energy Neutrinos?
  - Supernovae in dense environment: ejecta forms shocks, enabling particle acceleration?
  - Supernovae with jet, choked in the ejecta: particle acceleration at jet head and within the jet?
- **RELEVANCE:**
  - Sources of high-energy neutrinos still unknown
  - Supernovae suggested as potential sources, no study looked for them
- **WHAT WAS DONE:**
  - Supernova catalogue built from Open Source Catalogues
  - Perform unbinned likelihood analysis to look for correlation with 7 years of IceCube track events
- **RESULTS:**
  - No correlation found
  - Derived upper limits on the total emitted neutrino energy and contribution of Supernovae to the diffuse neutrino flux