# Exploring the Potential of Multi-Detector Analyses for Core-Collapse Supernova Neutrino Detection

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## Abstract

This poster report the potential of multi-detector analyses to enhance the scientific outputs from the next close-by CCSN. We first studied the benefit of using a Bayesian approach to include a prior in an existing triangulation method. The proposed method leads to reduce the 90% confidence area of the source localization by more than 55% for all the considered detector combinations. We then studied the potential of combining detectors sensitive to different neutrino flavors to determine the neutrino mass ordering and constraining the mass of the CCSN progenitor. The different hypotheses indeed influence the number of neutrinos detected in each detector. Using the technique proposed in this contribution, one can determine the neutrino mass ordering with more than 14 $\sigma$ for [1,10] ms and more than 6 $\sigma$ for [1,20] ms when considering the ratios and asymmetries for (DUNE,DarkSide) and ((KM3NeT+DUNE,DarkSide)). The sensitivity to different progenitor mass is smaller with only a 3 $\sigma$ effect for [1,20] ms when considering the ratios and asymmetries for (DUNE, DarkSide) and ((KM3NeT+DUNE,DarkSide)).