

Core-Collapse Supernova neutrinos in DarkSide-20k and Argo

When a core-collapse supernova (SN) explodes, only 1 % of its energy is released through electromagnetic waves: the rest is emitted via neutrinos. If a galactic supernova will show up during its data taking, DarkSide-20k, a future 50-ton liquid argon dual-phase TPC, designed for the direct detection of dark matter particles, will perform a flavour insensitive detection of SN neutrinos via coherent elastic neutrino-nucleus scattering, (CE ν NS), providing additional information on the explosion mechanism. The sensitivity study is extended to Argo, the following future detector, filled with 300 tons of Liquid Argon. Furthermore, by the comparison with a charged current detection, discrimination between neutrino mass orderings, normal or inverted, can be inferred.

Working group

WG6

Authors: Mrs LAI, Michela (INFN Cagliari); Dr BONIVENTO, Walter M. (INFN Cagliari); FRANCO, Davide (APC); RENSHAW, Andrew; YE, Ziping

Presenter: Mrs LAI, Michela (INFN Cagliari)

Session Classification: Poster session NB: do not use Safari; use Firefox, Chrome or Edge