A&A 563, C1 (2014)
DOI: 10.1051/0004-6361/201117810e

Astronomy & Astrophysics

IceCube sensitivity for low-energy neutrinos from nearby supernovae *(Corrigendum)*

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A&A 535, A109 (2011), DOI: 10.1051/0004-6361/201117810

Key words. neutrinos – supernovae: general – instrumentation: detectors – errata, addenda

This erratum corrects Fig. 16 of our original paper (Abbasi et al. 2011). The figure displays the number of standard deviation with which the IceCube neutrino observatory can distinguish between normal and inverted neutrino hierarchies, provided that the time dependent neutrino luminosities and energy spectra associated with a core collapse supernova were precisely known. We found that the abscissa of Fig. 16 was shifted to the right by 5 kpc which led to results that were too conservative. All other conclusions of the paper remain unaffected.

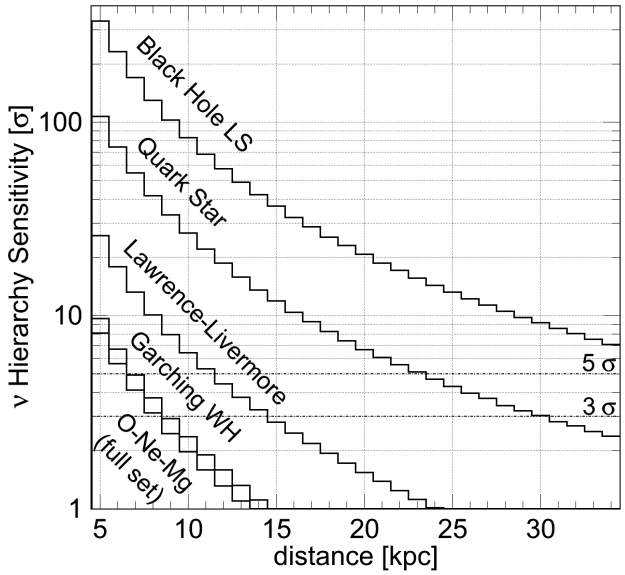

Fig. 16. Number of standard deviation with which scenarios A (normal hierarchy) and B (inverted hierarchy) can be distinguished in at least 50% of all cases as function of supernova distance for some of the models listed in Table 4. A likelihood ratio method was used assuming known model shapes.

6.6. Neutrino hierarchy sensitivity and rate summary

The number of standard deviation with which normal and inverted ν hierarchies (Scenarios A and B) can be distinguished are plotted in Fig. 16 as function of the supernova distance for selected models. The values represent the optimal cases when model shapes (but not necessarily the absolute fluxes) are perfectly known. Table 4 lists the number of neutrino induced photon hits that would be recorded by IceCube on top of the DOM noise for various supernova models. Note that the number of expected signal hits scales with 1/distance^2; the dependence of the detection significance as function of distance can be read from Fig. 12.

References

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