

## Chasing cosmic tau neutrinos in the abyss

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Author: Bormuth, R. Title: Chasing cosmic tau neutrinos in the abyss Issue Date: 2017-12-07 behorend bij het proefschrift "Chasing cosmic tau neutrinos in the abyss"

- 1. The progress of neutrino astronomy requires new –large scale– neutrino telescopes with improved resolution. - Chapter 1
- 2. For the calibration of the KM3NeT detector, the radioactive decays of sea salt provide a solution that comes for free. Chapter 4
- The parameter dependence of the global likelihood evaluation can be overcome by incorporating known kinematic constraints from the tau neutrino interaction.
  Chapter 5
- Similar to an increase in the amount of pixels of a digital camera, small light sensors yield better performances than large light sensors for the same cathode area. - Chapter 4 and Chapter 6
- 5. The absence of neutrinos from the Glashow Resonance contradicts the use of an unbroken power law model to describe the IceCube flux. *Aaron C. Vincent, Sergio Palomares-Ruiz, and Olga Mena, Phys. Rev., D94*(2):023009,2016
- 6. The claim that one can unambiguously identify tau events based on the amplitude of the analog signal of a single light sensor is questionable. *M. G. Aartsen et al., https://arxiv.org/abs/1701.03731*
- Despite the short lifetime of the tau lepton, acknowledging the impact of their detection on neutrino telescope observations is important. - *Reya*, *E. and Rodiger*, *J.*, 10.1103/PhysRevD.72.053004
- Although direct detection experiments are needed, expecting breakthroughs in Cosmic Ray physics from them is unlikely. - Domenico D'Urso, https://arxiv. org/abs/1411.4642
- 9. Determination of the neutrino mass hierarchy can be made by experiments that actually do not detect neutrinos.
- 10. Both the IceCube and KM<sub>3</sub>NeT collaborations found that the in-situ performance of light sensors surpasses their performance in the laboratory, making laboratory performance evaluations difficult.
- 11. A scientific collaboration is an ideal environment for studies of human behavior and communication.
- 12. The lack of permanent positions combined with the modus operandi of selecting scientific staff often results in an unfavorable match between the employee's skills and the job requirements.

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