

**XVIII Workshop on Neutrino Telescopes**  
**Palazzo Franchetti – Istituto Veneto**  
**Venice, 18-22 March 2019**

## **Poster Session**

### **Submission of Abstract**

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Title of the Poster: Point-source searches of PeV-EeV Earth-skimming neutrinos with  
MAGIC telescopes: optimisation study of the event selection

Abstract Text:

MAGIC is a stereoscopic system of two 17 m diameter Imaging Atmospheric Cherenkov Telescopes, located at a height of 2200 m a. s. l. on the Canary Island of La Palma. It is dedicated to the detection of gamma-ray induced air showers with energies above 30 GeV. In addition, MAGIC can be used for the measurement of PeV-EeV neutrinos through the Earth-skimming technique. MAGIC can point up to about  $5^\circ$  below the horizon and an optimal neutrino visibility window, located towards the Atlantic ocean, is exploited. A residual background due to cosmic rays is however present. In this work, we analyse the selection cuts needed in order to isolate neutrino candidates. This study is performed on a dataset collected by pointing MAGIC towards the neutrino visibility window. These data can be used as a reasonable background sample. The upper limit setting capabilities are explored, in view of possible observations triggered by the IceCube Observatory.

Summary:

MAGIC can point below the horizon, exploiting an optimal neutrino visibility window, that goes from  $90^\circ$  to  $95^\circ$  in zenith, across an azimuthal range of  $80^\circ$ . From this direction, up-going tau-lepton-induced-air showers resulting from tau neutrinos can be observed. A residual background due to cosmic rays is however present. In this work, we optimise the selection cuts, for possible future follow-up of events triggered by IceCube. Above PeV, the MAGIC effective area to tau neutrinos is indeed significant and compelling results can be obtained.

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Kindly follow the instructions above and send the abstract (.pdf file) to <mailto:salente@pd.infn.it> by February 22nd 2019. Response will be sent to the submitter's e-mail address indicated above, by March 1<sup>st</sup>. Posters will be exhibited all week long at the workshop site. Discussion will take place on Thursday March 21st, during the Poster Party. At least one author must be available for "question-answer" time. Best 3 posters will be awarded on Friday 22nd, during the closing plenary session of the workshop.