

**XVIII Workshop on Neutrino Telescopes
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**Poster Session
Submission of Abstract**

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Title of the Poster: Study of neutron tagging for Hyper-Kamiokande

Abstract Text: (no longer than 800 characters)

Hyper-Kamiokande (HK) project which construct the world largest Water-Cherenkov detector, where is about 600m underground of Kamioka mine in Japan, is proposed. The fiducial volume is about 10 times larger than Super-Kamiokande (SK). The construction of HK is planned to start in 2020. Identifying neutron is crucial and it has an important role in various physics studies in HK. Especially, a detection of the neutron from inverse beta decay is critical for the observation of the diffuse supernova neutrino background. In HK, brand-new PMTs, which have about two times higher quantum efficiency than the one used in SK, will be installed. Therefore, it is expected that the efficiency of neutron tagging will be drastically improved. In this poster, we will introduce the algorithm to evaluate the neutron tagging efficiency using detector simulation, and report the result of evaluation using this algorithm.

Summary: (no longer than 400 characters. Insert a tag, key word, topic, etc.)

As a baseline design, Hyper-Kamiokande will have 40% photo-coverage and PMT dark rate is assumed to be 4.2kHz. The neutron tagging efficiency in this condition is evaluated to be 67.2%, which is more than 3 times larger than the value in Super-Kamiokande. In addition, neutron tagging efficiency with several different conditions (photo-coverage, dark rate) are also evaluated.

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 1st. 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.