

**XVIII Workshop on Neutrino Telescopes
Palazzo Franchetti – Istituto Veneto
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**Poster Session
Submission of Abstract**

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Title of the Poster:

Search for neutrino signal associated with gravitational wave from neutron-star merger

Abstract Text: (no longer than 800 characters)

The first detection of gravitational wave was achieved by LIGO experiment in 2016 February, which declares not only the proof of general relativity but also the beginning of the new area, gravitational wave astronomy.

GW170817 is the first detection of the gravitational wave event from neutron-star merger. Unlike those from black-hole merger, the optical light, gamma ray, ultraviolet ray, infrared ray, as well as the neutrino, are possible to be observed from neutron-star merger.

Gravitational wave by laser interferometric detector, gamma ray burst by Fermi satellite, kilonova by all kinds of telescope, as well as the neutrino signal by Cherenkov detector, make up an observation network and an opportunity of multi-message study.

This poster focuses on the neutrino signal from neutron-star merger in Super-Kamiokande, which is a 50kton water Cherenkov detector with best sensitivity in the world for neutrino from MeV to GeV. The possible mechanism of neutrino emission from neutron-star merger will be introduced, and the result of neutrino search for GW170817 in Super-Kamiokande will also be shown.

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

#astroparticle physics #gravitational waves #neutrino physics

The predictions for neutrino emission via binary neutron star mergers have been made by some theoretical models in different energy ranges. For high energy neutrinos ($\sim 10^{14}$ eV), they are produced from the relativistic ejecta of gamma-ray bursts; for the few-tens-of-MeV neutrinos, the mechanism is considered to be

similar to core-collapse supernovae. This poster reports the results of a neutrino search in Super-Kamiokande for coincident signals with the first detected gravitational wave produced by a binary neutron star merger, GW170817, which was followed by a short gamma-ray burst, GRB170817A, and a kilonova/macronova. The coincident neutrino search was made in the range from 3.5 MeV to ~ 100 PeV, in a time window of ± 500 seconds around the gravitational wave detection time, as well as during a 14 day period after the detection. No significant neutrino signal was observed for either time window. The upper limits on the neutrino fluence for GW170817 are given at 90% confidence level.

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.