

TeV gamma-ray observations of GW170817 with H.E.S.S.

Thursday, August 30, 2018 5:55 PM (0:15)

Abstract content

In this contribution, the search of high-energy gamma ray emission as electromagnetic counterpart of the binary neutron star merger GW170817 with the H.E.S.S. Imaging Air Cherenkov Telescopes is presented. Observations started 5.3 h after the merger and contained the counterpart SSS17a that was identified several hours later. It stands as the first data obtained by a ground-based pointing instrument on this object.

The H.E.S.S. telescopes monitored the source over several days, covering timescales from 0.22 to 5.2 days after the merger and energy ranging between 270 GeV to 8.55 TeV. No significant gamma ray emission has been found. Upper limits on the very-high-energy gamma-ray flux were derived for the remnant of the binary neutron star system, constraining the non-thermal, high-energy emission.

We will report on the observation campaign on GW170817 together with the optimised scheduling algorithms that allow H.E.S.S. to react rapidly. We will present the obtained data and discuss constraints to recently proposed models of high-energy, non-thermal long-term emission from GW170817. Finally, an outlook and proposed observation strategies for the next multi-messenger campaigns with H.E.S.S. will be provided.

Primary author(s) : Mrs. SEGLAR ARROYO, Monica (CEA)

Co-author(s) : Dr. SCHUSSLER, Fabian (IRFU / CEA Paris-Saclay); Mr. HOISCHEN, Clemens (DESY Zeuthen); Mr. OHM, Stefan (DESY, Zeuthen); Dr. FUESSLING, Matthias (DESY); Dr. PÜHLHOFER, Gerd (IAAT); Prof. ROWELL, Gavin (University of Adelaide); Dr. TAYLOR, Andrew (DESY); Dr. EGBERTS, Kathrin (Potsdam University)

Presenter(s) : Mrs. SEGLAR ARROYO, Monica (CEA)

Session Classification : Gravitational Waves

Track Classification : GW and followup