

SciNeGHE 2016 High-energy gamma-ray experiments at the dawn of gravitational wave astronomy



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INTEGRAL Highlights and perspectives for EM follow-up of Gravitational-Wave and HE Neutrino events

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ESA's INTEGRAL Space Observatory was launched on 17 October 2002 from the Baikonur Cosmodrome (Kazakhstan) aboard a Proton rocket as part of the Russian contribution to the mission. To date the spacecraft, ground segment and scientific payload are in excellent state-of-health, and INTEGRAL is continuing its scientific operations. In view of its 14 years successful science outcome, ESA is considering its extension till 2018-2020.

INTEGRAL has so far produced an unprecedented harvest of results in the soft gamma-ray band, ranging from the inventory of 1000 energy sources (Bird, et al., APJS, 2015), to the discovery of hundreds of variable soft gamma-ray sources, the mapping of the Aluminium and 511 keV annihilation line in the Galaxy, the evidence of polarized gamma ray emission from the Crab Nebula, strong Gamma-ray burst and the galactic BH Cyg X-1, the first detection of nuclear lines from SN2014J and the detailed study of the high energy emission from the galactic microQSO V404.

More recently, INTEGRAL has successfully observed with its All-Sky Monitors SPI-ACS and IBIS-VETO the sky counterpart of the LIGO-VIRGO triggers from GW150914 (V. Savchenko, et al., ApJL, 820, L36, 2016, Abbott, et al, 2016, ApJL, 826, L13, 2016, Abbott, et al, 2016, ApJS, 225, 1, pp8, 2016) and LTV151012, with no evidence of contemporary signals. Similar type of observation has been performed for the EHE Neutrino events IceCube 160806A (GCN 19789) and IceCube-HESE 128340.

Following this successful results INTEGRAL has now a better reaction time to perform ToO observations correlated with the above mentioned triggers. This is particularly important in view of the LIGO-VIRGO O2 observations starting soon.

This paper summarizes the current INTEGRAL scientific achievements and future prospects, with particular regard to the so called "New astronomies", i.e. Gravitational Wave and High Energy Neutrinos counterpart search.

Primary author: Dr UBERTINI, Pietro (ROMA2, IAPS-INAF)

Presenter: Dr UBERTINI, Pietro (ROMA2, IAPS-INAF)

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