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GCN CIRCULAR 20366, LIGO/Virgo G268556: INTEGRAL search of temporally coincident prompt hard X-ray emission

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SUBJECT: LIGO/Virgo G268556: INTEGRAL search of temporally coincident prompt hard X-ray emission
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We investigated serendipitous INTEGRAL observations carried out at the time of the LIGO/Virgo G268556.The satellite was pointing at RA = 00:04:02 Dec=+67:14:38, away from the high-probability region, derived from the LIGO Bayestar pipeline. The anti-coincidence shield of spectrometer on board of INTEGRAL (SPI/ACS) covered the full LIGO 90% confidence region and provided

the most stringent constraints on the flux of a possible electromagnetic counterparts in the energy range covered by INTEGRAL instruments.
We investigated the SPI-ACS light curve between -100 and +100 s from the trigger time (2017-01-04 10:11:59 UTC) on temporal scales from 0.1 to 10 s and found no significant excesses over a very stable background.

The SPI/ACS light curves, binned at 50 ms, are derived from 91 independent detectors with different lower energy thresholds (mainly between 50 keV and 150 keV) and an upper threshold at about 100 MeV.

The ACS response varies as a function of the incident angle.
Assuming an optimal perpendicular direction of the burst to the INTEGRAL pointing direction, we estimate a 3-sigma upper limit corresponding to fluences of 1.6e-7 erg/cm2 for a 1 s duration, 4.5e-7 erg/cm2 for 10 s, and 5e-8 erg/cm2 for 0.1 s. For this computation, we adopt a low threshold at 100 keV and Band model parameters âˆ’0.5, âˆ’2.5 with peak E_0 ~ 600 keV.
The optimal orientation is compatible with a large part of the high-probability sky region of the trigger. The limit anywhere in the 90% confidence range of the LIGO Bayestar localisation is at most 50% less stringent.

Investigations of the light curves from the other INTEGRAL instruments covering part of the LIGO localisation region (IBIS VETO, ISGRI, and PICsIT) did not reveal any significant transient event in the 200 s temporal window centred on LIGO/Virgo G268556, but provide less stringent upper limit on the fluence.