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INTEGRAL Upper Limits on Gamma-Ray Emission Associated with the Gravitational Wave Event GW150914

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Using observations of the INTErnational Gamma-Ray Astrophysics Laboratory (INTEGRAL), we put tight upper limits on the gamma-ray and hard X-ray prompt emission associated with the gravitational wave event GW150914, discovered by the LIGO/Virgo collaboration. The omni-directional view of the INTEGRAL/SPI-ACS has allowed us to constrain the fraction of energy emitted in the hard X-ray electromagnetic component for

the full high-probability sky region of LIGO/Virgo trigger. Our upper limits on the hard X-ray fluence at the time of the event range from $F_\gamma = 2 \times 10^{-8}$ erg cm^{-2} to $F_\gamma = 10^{-6}$ erg cm^{-2} in the 75 keV - 2 MeV energy range for typical spectral models. Our results constrain the ratio of the energy promptly released in gamma-rays in the direction of the observer to the gravitational wave energy E_γ/E_{GW} $\langle 10^{-6}$. We discuss the implication of gamma-ray limits on the characteristics of the gravitational wave source, based on the available predictions for prompt electromagnetic emission.