INTEGRAL discovery of a bright highly obscured galactic X-ray binary source IGR J16318-4848

R. Walter1,2, J. Rodriguez3,1, L. Foschini4, J. de Plaa5, S. Corbel3,6, T. J.-L. Courvoisier1,2, P. R. den Hartog5

Walter R. et al. Roland.Walter@obs.unige.ch

INTEGRAL Science Data Centre, Chemin d’Ecogia 16, CH–1290 Versoix, Switzerland Observatoire de Genève, Chemin des Maillettes 51, CH–1290 Sauverny, Switzerland CEA Saclay, DSM/DAPNIA/SAp (CNRS FRE 2591), Bat 709, F–91191 Gif-sur-Yvette Cedex, France IASF/C.N.R. Section of Bologna, Via Pietro Gabetti 101, I–40129 Bologna, Italy SRON National Institute for Space Research, Sorbonnelaan 2, 3584 CA Utrecht, The Netherlands Université Paris VII (Fédération APC), F–91191 Gif sur Yvette, France Astrophysics Missions Division, Research and Scientific Support Department of ESA, ESTEC, PO Box 299, 2200 AG Noordwijk, The Netherlands CASS, Code 0424, University of California San Diego, La Jolla, CA 92093-0424, USA IASF/C.N.R. Section of Roma, Area di Ricerca di Tor Vergata, Via del Fosso del Cavaliere, I–00133 Roma, Italy

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INTEGRAL regularly scans the Galactic plane to search for new objects and in particular for absorbed sources with the bulk of their emission above 10−20 keV. The first new INTEGRAL source was discovered on 2003 January 29, 0.5 from the Galactic plane and was further observed in the X-rays with XMM-Newton. This source, IGR J16318-4848, is intrinsically strongly absorbed by cold matter and displays exceptionally strong fluorescence emission. IGR J16318-4848 is probably a High Mass X-ray Binary neutron star or black hole enshrouded in a Compton thick environment. Strongly absorbed X-ray background between 10 and 200 keV.

Introduction

X-ray binaries (where the compact object is a neutron star or black hole) can become strong hard X-rays emitters when accretion takes place. Among the ∼300 known X-ray binaries in our Galaxy and the Magellanic clouds, a few systems show strong intrinsic photo-electric absorption: GX 301–2 (Swank et al. 1976), Vela X–1 (Haberl & White 1990), CI Cam (Boirin et al. 2002). Moderate absorption was also detected in a few X-ray bursters (Natalucci et al. 2000). We report here on the discovery of IGR J16318-4848, a Compton thick X-ray binary in which the X-ray obscuring matter has a column density as large as the inverse of the Thomson cross section.

High energy observations and data analysis

IGR J16318-4848 was discovered using the INTEGRAL imager IBIS/ISGRI (Ubertini et al. 2003; Lebrun et al. 2003) on 2003 January 29, 0.5 from the Galactic plane with an accumulation time of 508 ksec. The position of the source (RA = 16h31.8m and DEC = −48d48′) was determined with an accuracy of 2. IGR J16318-4848 is detected up to 80 keV with a mean 20-50 keV flux of 6 × 10^{-11} erg cm^{-2} s^{-1}. Significant (> 5σ) intensity variations occur on time scales as short as 1000 sec.