REVEALING THE NATURE OF THE HIGHLY OBSCURED GALACTIC SOURCE IGR J16318-4848

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ABSTRACT

The X-ray source IGR J16318-4848 was the first source discovered by INTEGRAL on 2003, January 29. We carried out optical and near-infrared (NIR) observations at the European Southern Observatory (ESO La Silla) in the course of a Target of Opportunity (ToO) programme. We discovered the optical counterpart and confirmed an already proposed NIR candidate. NIR spectroscopy revealed a large amount of emission lines, including forbidden iron lines and P-Cygni profiles. The spectral energy distribution of the source points towards a high luminosity and a high temperature, with an absorption greater than the interstellar absorption, but two orders of magnitude lower than the X-ray absorption. We show that the source is an High Mass X-ray binary (HMXB) at a distance between \( 1 \text{ and } 6 \text{ kpc} \), the mass donor being an early-type star, probably a sgB\([e]\) star, surrounded by a rich and absorbing circumstellar material. This would make the second High Mass X-ray Binary (HMXB) with a sgB\([e]\) star after CI Cam, indicating that a new class of strongly absorbed X-ray binaries is being unveiled by INTEGRAL.

Key Words: CIRCUMSTELLAR MATTER — STARS: EMISSION-LINE, BE — X-RAYS: BINARIES
Fig. 1. R band image of the field of view of IGR J16318-4848. We reported the XMM uncertainty circle of 4".

Fig. 2. Ks band image of the same field.

Fig. 3. NIR spectrum (0.95-1.65 μm)

Fig. 4. NIR spectrum (1.5-2.05 μm)

Fig. 5. NIR spectrum (2.0-2.55 μm)

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REFERENCES
Courvoisier, T., Beckmann, V., Bourban, G. et al. 2003, IAU Circ., 8063

(2004) for more details. INTEGRAL is on the course of revealing a new population of obscured high energy sources, which might help us to understand the evolution of high-energy binary systems.