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# INTEGRAL OBSERVATIONS OF THE TRANSIENT SOURCE IGR J19140+098

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**IGR J19140+098 was (re-)discovered during the early INTEGRAL observations of GRS1915+105 in March 2003. The following observations by INTEGRAL and RXTE show significant variability on various time scales from 100s to 1ks, but no pulsations. The ISGRI spectra show strong spectral variability in the 20-80keV range. Combined JEMX_2-ISGRI spectra are well fitted by a "multicoulour" disk model with a rather high inner disk temperature (≃1.8 keV). RXTE data also reveal an apparently broad ionised iron line not detected in earlier INTEGRAL observations. These results are compatible with a galactic X-ray binary source.**

IGR J19140+098 (Simbad corrected name IGR J19140+0951) was observed in the FOV of IBIS, the imager aboard INTEGRAL, for the first time during an observation of GRS1915+105 (PI : Hannikainen) on 6th March 2003 ( Spacecraft revolution #48, 88 ks).The source is about 1' close to GRS1915+105 and has been observed after in two other revolutions : Rev #69 (resp #70) 9th May (resp 10th-11th May) during 76 ks (resp 96 ks) but not in Rev #59 on 9th April (90 ks ). RXTE observed the source on March 10th 2003 during 3 ks (public data). We show hereafter the resulting images, spectra and lightcurves using ISGRI (first layer detector of IBIS instrument, energy range : 20 keV-10 MeV) and JEMX_2 (energy-range 3-21 keV).

The source seems to be rather variable on various time scales : it varies on a monthly timescale. The ISGRI light curves show that the flux can increase by a factor of 3 in 2000s. RXTE light curves (16 s bin size) seem to define a minimum variation time scale. The autocorrelation function indicates a typical correlation time of about 150 s. Using the causality argument, it corresponds to a size of about 3 AU. No QPOs were identified in the PDS The integrated ISGRI flux in the 13-100 keV energy range varied from 1.8 $10^{-9} erg.s^{-1}.cm^{-2}$ (highest value observed) in rev#70 to the minimum detection level in rev# 59. JEMX_2 and ISGRI spectra show that the emission can be modelized consistently by a "hard" power law in the 10-100 keV energy range ($\Gamma = 1.7$). Adding a disk model for the lower energy emission (freezing the power law parameters) improve the fits (then the temperature obtained is rather high $T_{in} \simeq 1.8\ keV$). Above 20 keV and under 80 keV, spectra are well fitted by a simple power law model but show strong spectral variability (Fig. 1). Adding a gaussian line to JEMX_2-ISGRI spectra does not reduce the $\chi^2$ significantly whereas it does in RXTE data, performed two days later. The line obtained is then consistent with a broad gaussian line $\sigma = 0.4\ keV$) centered on 6.7 keV, compatible with a ionized $Fe\ K_\alpha$ line (Fig. 1). The source IGR J19140+0951 has been re-discovered by INTEGRAL. The spectra are well-fitted by a power-law + multicolour disk. A broad and apparently ionized iron line is clearly detected in RXTE public data but not in INTEGRAL observations taken 2 days earlier. The source exhibits strong spectral and flux variabilities more typical of an X-ray binary than of an AGN. This source looks like IGR 16320-4751 another X-ray source (re-) discovered by INTEGRAL which manifest similar variable behaviour (*Rodriguez et al. 2003*), and which is most probably a HMXB hosting a galactic neutron star.

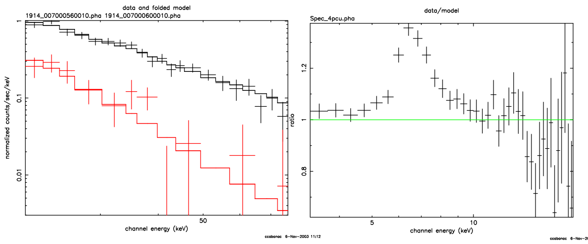


Fig. 1. *Left* 20-80 keV ISGRI spectra of the source during rev#70 separated by 8.6 ks. Resulting photon index are 2.210.15 (black) and 3.81.0 (red). *Right* Ratio between the RXTE-PCA data and the model chosen (simple powerlaw with $N_H$ fixed to 5.6 $10^{22}\ cm^{-2}$ ).

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## REFERENCES

Hannikainen et al. 2003, [astro-ph/309532]
Hannikainen, Rodriguez & Potschmidt 2003, IAUC 8088
Rodriguez et al. 2003, A&A, 407, 41-45
Swank & Markwardt, 2003, ATEL #128