# MULTIWAVELENGTH TEMPORAL BEHAVIOR OF GRS 1915+105

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## GRS 1915+105

The transient X-ray source GRS 1915+105 was discovered in August 1992 with the *GRANAT*/WATCH all-sky monitor (Castro-Tirado *et al.* 1994). Subsequent VLA observations from March through April 1994 led to the discovery of apparent superluminal motion in a pair of radio condensations moving away from the compact radio core (Mirabel & Rodriguez 1994). These jet-like features are interpreted as a bipolar outflow with bulk velocity $\sim 0.9c$. Although no optical counterpart has been observed, due to the heavy extinction in the Galactic plane, and therefore not enabling measurements of the mass of the compact object, the hard X-ray spectrum and high luminosity ($\sim 10^{39}$ erg s$^{-1}$), extreme variability in the X-ray light curve and the relativistic jets make GRS 1915+105 a strong black hole candidate.

GRS 1915+105 has been extensively observed in the radio, X-ray and hard X-ray since its discovery. In all wavebands the emission is highly variable and complex, including very large amplitude flaring on timescales of minutes in the X-rays (e.g. Greiner, Morgan & Remillard 1996) and Pooley & Fender (1997) have identified three different types of behavior in the radio flux density following a one and a half years' monitoring at 15 GHz with the Ryle telescope. In Figure 1 we have gathered together a sample of light curves of GRS 1915+105, demonstrating flaring activity and periods of total quiescence in both the radio and X-ray domains. There is no obvious correlation between the radio and X-ray/gamma-ray behavior.



*K. Koyama et al. (eds.), The Hot Universe*, 396-397.

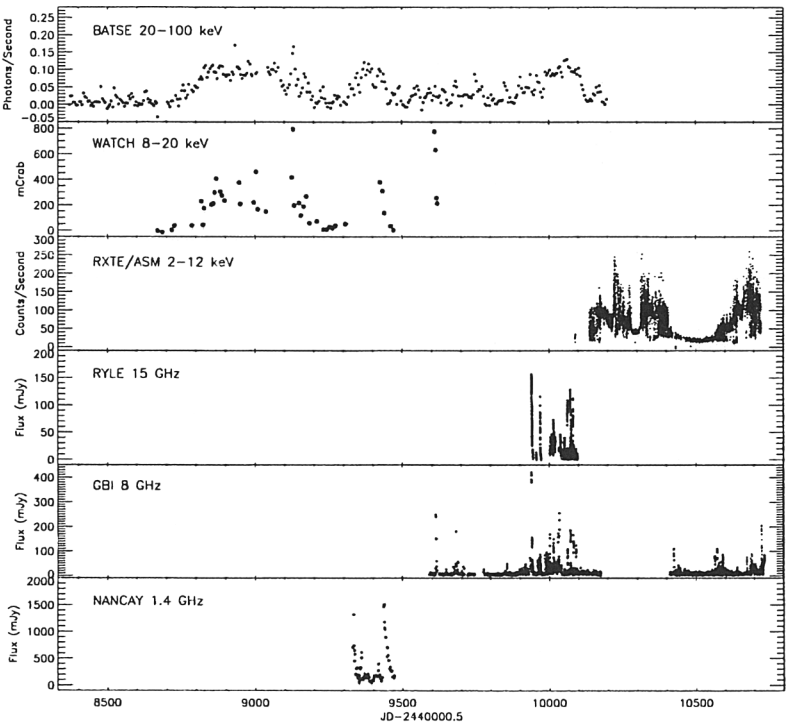


*Figure 1. References.* BATSE: http://cossc.gsfc.nasa.gov/cossc/batse/hilev/occ.html; WATCH: Finoguenov *et al.* (1994); RXTE: http://space.mit.edu/XTE/ASM_lc.html; RYLE: R. Fender (priv. comm.); GBI: E. Waltman (priv. comm.) and http://www.gb.nrao.edu/gbint/GBINT.html; NANCAY: Rodriguez *et al.* (1995)

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