

S12b 「あすか」によるセイファート2型銀河 NGC 7582 の観測

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We present the results of two ASCA observations of Seyfert-2 galaxy NGC 7582. The well-exposed high quality observation made in 1996 revealed that NGC 7582 is variable at >99% confidence in both short (128 s) and long (5760 s) temporal analyses. The short-time variability is mostly seen in the hard-band light curve (2-10 keV) with RMS fractional variance $\sigma_{RMS} \approx 0.3$, while the soft-band light curve (0.5-2 keV) almost remains constant. The same timing properties were confirmed by carefully analyzed another earlier, less exposed observation made in 1994.

The overall broadband (0.5-10 keV) spectrum is complicated. It shows a heavily absorbed ($N_H \sim 1 \times 10^{23} \text{ cm}^{-2}$) power-law continuum superimposed upon an iron $K\alpha$ line near 6.4 keV with $EW \sim 180 \text{ eV}$. Below 2 keV, a “soft excess” emission dominates the spectrum.

The timing and spectral properties suggest that we see the hidden active nucleus through the cold absorber which can be identified with the obscuring torus. The observed iron $K\alpha$ line is also consistent with this picture. The nucleus is characterized by the quantities of rapid variability amplitude (e.g. σ_{RMS}) and the absorption corrected luminosity $\sim 3.1 \times 10^{42} \text{ ergs s}^{-1}$ (assuming $H_0 = 50 \text{ km s}^{-1}\text{Mpc}^{-1}$) in 2-10 keV, which lie well within those for the Seyfert 1 galaxies. The constant 0.5-2 keV soft X-ray spectrum, though contaminated by a certain amount of starburst activities, can be interpreted as the scattered central continuum radiation. Since the scattering region is most likely to have extended spatial structure, the soft component does not show any short-time variabilities. Thus NGC 7582 is one of the typical examples of a Seyfert-2 galaxy which exhibits both the obscuring and scattering picture in the exact way expected from the unification scheme of Seyfert galaxies.