S11b Discovery of a new X-ray jet of PKS 2201+044 and its emission mechanism

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The high spacial resolution of *Chandra* opens a new window on the studying physics of relativistic jets. Many X-ray jets have been resolved (e.g., Celotti et al. 2001,Marshall et al. 2002, Sambruna et al. 2002), and their emission mechanism extensively discussed. In this poster, we report on the discovery of an X-ray jet in PKS $2201+044$. This is a nearby ($z = 0.028$) BL Lac object hosted in a prominent elliptical galaxy (Falmo 1996). The *Chandra* observation was performed on 2002 April 30 as a part of the multi-wavelength campaign for jets. An X-ray jet was clearly detected in the obtained ACIS image at $\sim$ 2".2 from the center of a bright nucleus. This position is perfectly correlated with the known brightest radio knot and the associated optical one in the HST image. A net count of 450 cts was obtained for an effecteve exposure of 34.5 ks in an energy range of 0.5–5 keV, at a circular region of 1" radius (2".18 from the center of the nucleus). Contamination from the core is estimated to be 3.8–20 % against the total counts. The spectrum is reproduced by a relatively steep power-law, $\Gamma \sim 2$, with a fixed absorption column at Galactic value, $N_{\rm H} = 5.1 \times 10^{20}$ cm^{-2}. The intrinsic 0.5–5 keV X-ray flux is estimated as 5.6–7.1$\times 10^{-14}$ erg s^{-1} cm^{-2}. We also constructed a SED utilizing both HST data (STIS,7216.6260 A; WFPC2, 5442.9 A) and VLA ones (5GHz and 8.56GHz), and then, obtained spectral indices as $\alpha_{\rm r} \sim 0.88$, $\alpha_{\rm rx} \sim 0.67$, $\alpha_{\rm ro} \sim 0.92$, and $\alpha_{\rm ox} \sim 0.8$. The emission mechanism will be discussed.