OBSERVATIONS OF PKS 2155–304 WITH THE EXTREME ULTRAVIOLET EXPLORER

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We have studied the first extreme ultraviolet spectroscopic data and a high accuracy light curve for the BL Lac object PKS 2155−304 observed with the Extreme Ultraviolet Explorer (*EUVE*) on July 21-22, 1992. This target was observed with the Deep Survey Spectrometer telescope for approximateley 30,000 sec during the in-orbit-calibration phase of the mission, allowing to obtain simultaneous image and spectrum.

The average observed count rate in the Lexan/B band (65–190Å) is 0.582±0.0047 count/sec. The EUV light curve shows variations of about 10% over a time scale of 0.3 days during the 1.3 days observing period. Variations at the same level have been reported for the ultraviolet band. The EUV flux measured by *EUVE* from PKS2155−304 is 1.7 times fainter than the flux measured by the *ROSAT* Wide Field Camera during the EUV survey in 1990. Simultaneous optical data indicate however that the overall shape of the spectrum has remained unchanged between the two observations.

PKS 2155−304 was detected in the short-wavelength spectrometer (70–190 Å) with detectable flux out to 105 Å. We modeled the spectrum with a power law plus absorption by interstellar HI, HeI (which dominates the absorption at the EUV wavelengths) and HeII. We applied various models with varying slope and HeI/HI ratio. The best fit is given by a model with an EUV energy index 1.6 and HeI/HI=0.1. From the model fit we can establish tight constraints on the amount of neutral He in the line of sight of the BL Lac. For an energy index of 1.6 and N(HI)=1.36×10^{20} cm^{-2} (the Galactic value) the 1σ interval for HeI/HI is 9.8-10.4%.

No intrinsic absorption in the BL Lac is needed to explain the spectral data and both the spectrum and the broad-band data are consitent with a simple spectral model in the extrapolation of the X-ray band.

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