S07a Chandra Detection of Hotspot and Knots of 3C 303

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We report the detection at X-rays of the radio/optical hotspot and knots of 3C 303 from a short (15 ksec) *Chandra* exposure in 2001 March. The X-ray morphology is similar to that of the radio/optical emission with peaks in the X-ray emission found at 5.5″(knot B), 9″ (knot C) and 17″ (hotspot) from the core of 3C 303. Despite the limited signal-to-noise ratio of the short *Chandra* exposure, the X-ray photon spectrum was measured for the hotspot. We construct the spectral energy distribution (SED) and find that the X-ray flux is well below the extrapolation of the radio-to-optical continuum, which we interpret as resulting from the production of X-rays via inverse Compton scattering of both synchrotron photons (SSC) and cosmic microwave background photons (EC/CMB). The magnetic field strength, region size, and the maximum energy of electrons are self-consistently determined for the hotspot to be $B \simeq 4.3$ μG, $R \simeq 6.5\times10^{21}$ cm, and $\gamma_{\rm max} \simeq 1.4\times10^{7}$. This implies a magnetic field strength a factor of ~ 30 below the equipartition value; $B_{\rm eq} \simeq 150$ μG. The origin of this large departure from equipartition is still uncertain, but the discrepancy is reduced if the plasma in the hotspot is moving with mildly relativistic speeds. Our observation of 3C 303, as well as recent *Chandra* detections of large scale jets and hotspots in a number of radio galaxies, confirm that particles are accelerated very efficiently in radio galaxies.