Catching NGC 4051 in the low state with Chandra

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Abstract

For the past 5 years we have monitored the nearby Seyfert galaxy NGC 4051 with the Rossi X-ray Timing Explorer. Although usually highly variable, in early 1998 NGC 4051 entered into an unusual low-flux, low-variability state which lasted 5 months. A second 3-month-long low state followed in 1999. Simultaneous observations of NGC 4051 during the first low state by BeppoSAX and RXTE suggested that the central continuum source had completely switched off, leaving only the echo of X-ray reflection from distant cold material, probably the molecular torus. To determine if any residual central continuum remains during the low states we were awarded a 50 ksec duration TOO with Chandra's ACIS-S, to be triggered if NGC 4051 entered the low state once more. Our target duly obliged in January and February 2001, and we present the results of the resulting TOO observation here, showing that the central, variable continuum does not go away during the low state, but mutates into a strange hybrid, very soft at low energies, and exceptionally hard at high energies.

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