Multi-scale Structures in Chandra Images of Cen A

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Abstract

Centaurus A (NGC 5128) is a giant early-type galaxy containing the nearest (at 3.5 Mpc) radio-bright AGN. Cen A was observed with the Chandra X-ray Observatory on several occasions since the launch in July 1999. The high-angular resolution Chandra HRC and ACIS images reveal X-ray multi-scale structures in this object with unprecedented detail and clarity, including the bright nucleus believed to be associated with a supermassive black hole. We explored the spatial structures surrounding the Cen A nucleus and jet using adaptive smoothing and deconvolution techniques. We detected multi-scale structures (with scales ranging from a sub arcsecond to several arcminutes) which suggest a complex geometry. The deconvolved full resolution images show that the Cen A nucleus is resolved and possibly asymmetric. We discuss several possible causes of the circum-nuclear extended emission and of the asymmetries. We analyze the X-ray large-scale structures and we compare them with observations in other wavelengths including optical, IR and radio. We discuss their implication for a global understanding of the morphology of the NGC 5128 galaxy.

CATEGORY: ACTIVE GALAXIES AND QUASARS