

ASCA OBSERVATION OF A1674

Detection of Metal-Free (Primordial) Hot Gas ?

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1. Introduction

A cluster of galaxies Abell 1674 is a nearby cluster ($z=0.106$) and an unique sample among Briel & Henry's (1993, A&A 278,379) catalogue. Although it has the largest number of galaxies within the Abell radius, 165, its X-ray luminosity measured in the ROSAT all-sky survey is 5×10^{43} erg/s (in 0.5-2.5keV), about one order of magnitude lower than the brightest one.

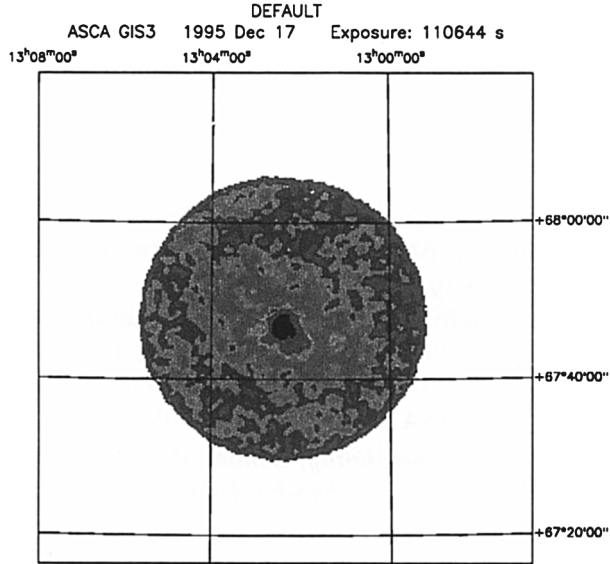
2. X-ray Images

A1674 was observed by ASCA in the AO-4 phase with 60ksec observation time. X-ray emitting gas is extending for diameter of 6arcmin, corresponding to 1Mpc. X-ray luminosity is 5.9×10^{43} erg/s (0.5-2.5keV), 1.25×10^{44} erg/s (0.5-10.0keV), which is consistent with ROSAT observation.

3. X-ray Spectrum

We fitted the X-ray spectrum with Raymond-Smith model (with absorption of our galaxy, hydrogen column density of 1.9×10^{20} cm⁻² fixed) and found the gas temperature of $3.19_{-0.50}^{+0.62}$ keV and the metal abundance of $0^{+0.20}$ solar. This abundance is very lower than typical metal abundance of about 0.4 solar for other clusters. Although we have tried 2-temperature model

or introduced an excess absorption, the best fit parameter for the metal abundance did not change.



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Figure 1. ASCA GIS image of A1674

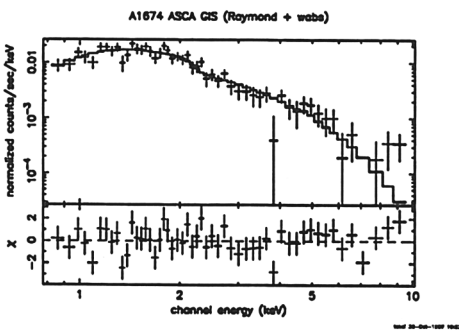


Figure 2. ASCA GIS spectrum of A1674

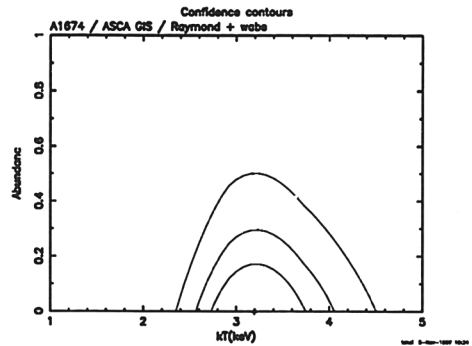


Figure 3. Confidence Contour