

Suzaku observation of the metallicity in the interstellar medium of NGC 1316

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Metal abundances of the hot X-ray emitting interstellar medium (ISM) include important information to understand the history of star formation and evolution of galaxies. The metals are mainly synthesized by Type Ia (SNe Ia) and stellar mass loss in elliptical galaxies. The productions of stellar mass loss reflect stellar metallicity. SNe Ia mainly product Fe. Therefore, the abundance pattern of ISM can play key role to investigate the metal enrichment history.

S0 galaxies, which are intermediate between ellipticals and spirals, are similar to elliptical galaxies in their optical spectra. Nevertheless, S0's in the cluster environment may have been changed from spiral galaxies when falling into clusters. X-ray observations are expected to provide a clue to this issue, because we can measure the metals accumulated over the Hubble time.

We investigated metal abundances of the hot ISM in the nearby S0 galaxy, NGC1316 (Fornax A), in the Fornax group. According to Goudfrooij *et al.* (2001), several galaxies may have merged into this galaxy 3 Gyr ago. We used a 43.9 ks of archival data achieved with the Suzaku satellite, because the XIS instrument of Suzaku is particularly suitable for the spectroscopy of extended X-ray emission with a low surface brightness.

The derived abundance pattern of O, Ne, Mg, Si against Fe of the ISM is close to that of new solar abundance of Lodders (2003). Furthermore, the abundance pattern of NGC 1316 is consistent with those of elliptical galaxies measured with Suzaku. This result indicates that the total amount of present stellar mass loss and SN Ia is similar between NGC 1316 and elliptical galaxies. In contrast, the abundance pattern of the ISM in NGC 4382, a S0 galaxy with an ISM temperature of 0.3 keV, is different from that of NGC 1316 (Nagino *et al.* in prep). These difference may be attributed to morphology types or system masses. We need more sample of S0 and elliptical galaxies to investigate the difference.

References

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