

T06a **Optically-detected galaxy clusters in the AKARI North Ecliptic Pole field**

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Galaxy clusters provide a good laboratory for studying galaxy evolution and cosmology. However, the number of galaxy clusters identified in the AKARI North Ecliptic Pole (NEP) field was limited due to the lack of optical data. Recently, deep observations by Subaru/HSC have been carried out in the AKARI NEP field. This work provides the detection of galaxy clusters in the AKARI NEP field mainly using the HSC 5-band photometry. Our method based on only the positional information of galaxies to select galaxy clusters without any further assumptions, in order to maximize the number of potential clusters. We calculated the local density around every galaxy by 10th-nearest neighborhood method, and defined over-densities. The over-densities were used to determine cluster candidates by the friends-of-friends algorithm. As the result, 112 clusters have been found in 5.4 deg^2 below redshift 1.2, and among them there are 5721 cluster galaxies. 8 X-ray clusters have been reported in literature in the AKARI NEP field, and half of them were detected through our method. We have studied the properties of clusters, for example, red galaxy fraction, and richness. The analyses of completeness and false detection have been performed to test the reliability of our cluster finding method.