T04a A candidate galaxy clusters at z=1.1: An Analysis of Eastern Region

Ichi Tanaka, Toru Yamada(Tohoku University), Kouji Ohta(Kyoto University), Nobuo Arimoto(Tokyo University), Tadayuki Kodama, Alfonso Aragón-Salamanca(Institute of Astronomy, Cambrige)

In the last ASJ meeting, we presented the results of the multicolor photometric study of a candidate cluster of galaxies possibly associated with the QSO 1335.8+2820 at z=1.1. There we found many galaxies with very red optical-NIR colors (R−K>4.5) which are consistent with those expected for passively-evolving old galaxies observed at z=1.1. It is clearly important to study the galaxy distribution on the sky and its richness of this candidate cluster further in detail, as it is one of very rare examples of such high-redshift larger-scale structure.

In this meeting, we report the results of studying the galaxy distributions in the K-band image covering the eastern sky adjacent to the 3×3 arcmin field studied previously, and those in the wider optical (R & I) images involving the all K-band fields. Although the quality of the new K-band data are somewhat poorer than the previously presented ones due to the weather conditions, it is essential and still useful in studying the sky distribution of relatively brighter galaxies (K<19).

We found that galaxy distribution in K-band images is rapidly decreasing toward the eastern side of the (preveously identified) cluster region and very few red galaxies are found in the eastern field. Cluster morphology is elongated toward south and possibly extends beyond our K-band fileds. We could marginaly confirmed these suggestions in the distribution of red galaxies (in R and I images) selected by the optical color, although the density contrast of the galaxy distribution in the optical images is much smaller mainly due to the k-correction effects. On the other hand, curiously, we saw some excess density of blue galaxies in the east side of the cluster candidate where red galaxies mostly disappear.

We will also report the results of the analysis of the color properties of moderately red galaxies (3.5<R−K<4.5) possibly associated with the high-redshift cluster by modeling galaxy SED with evolutionally synthesis codes.