Subaru SNe status report(preliminary)

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(1) Brief Summary

Subaru Search Runs are (a) spring 2001, (b) spring 2002, and (c) fall 2002. Among three runs, (c) is the most interesting, since we had good weather, and telescope time of Suprime-Cam was more than 10 nights. The section (2) in this report is mostly based on the run (c).

From these runs, we got 121((a)22 (b)55 (c)44) photometric candidates. We carried out spectroscopy of 48 ((a)8 (b)13 (c)27) targets. Among them 13 ((a)3 (b)5 (c)5) are classified as SNIa. Redshift distributions of these SNe compared with Riess et al. 2004 are shown in Figure1.
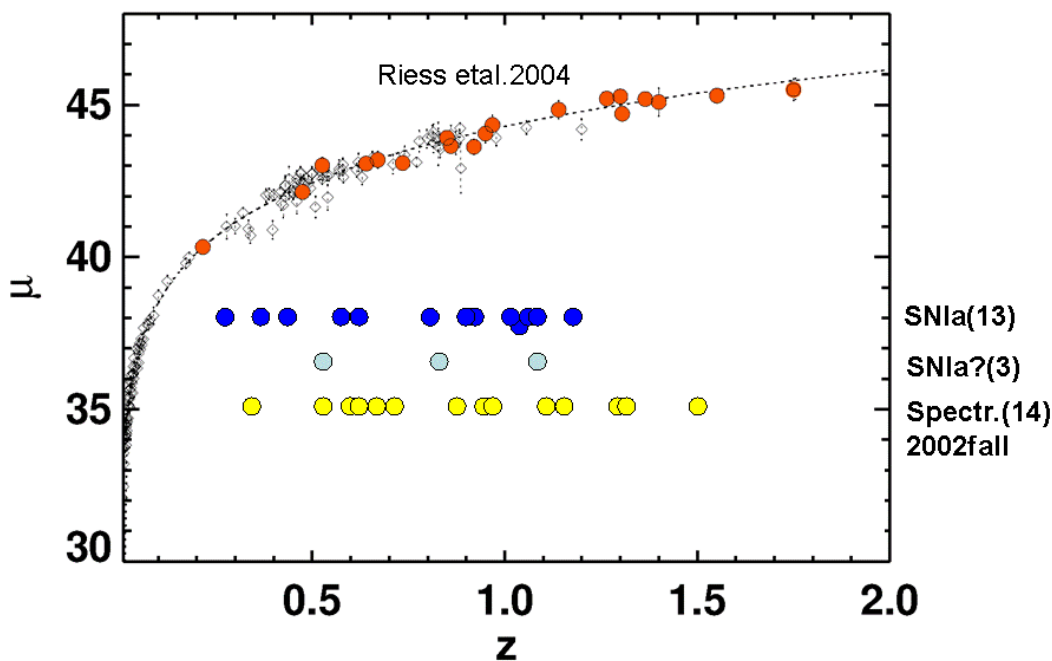

Figure1   Redshift distributions of Subaru SNe compared with Riess et al.(2004).

We carried out HST follow-up observations for 8 ((a)1 (b)4 (c)3) SNIa. Ground based NIR photometry seems to be unsuccessful due to instrument troubles and scattered lights of full moon. The most distant SNIa spectroscopically confirmed was SN2002kr (SuF02-060) at z~1.181, although we found possible SNe at z>1.2 (e.g. SN2002lc (SuF02-012) or unidentified objects at distant galaxies (e.g. SuF02-081 at z=1.478).

We have multi-color photometry of galaxies in the fall field (Subaru-XMM/Newton Deep

Field). Some of the observations will give us color information of SNe.

Preliminary (B,R,i,z) results of photo-z are obtained for possible hosts for which we have no spectroscopy. We eventually have V and NIR (J,H,K) photometry.

(2) Follow-up Photometry with Subaru

Final Reference of SXDS ((c)fall 2002 fields) was taken in 2003, and we carried out follow-up photometry with Subaru. Naoki and Tomoki did independent analysis. (Flat-fielding procedures and methods of photometry are both different.) Flat-fielding gives a few percent differences, although we haven't looked into details yet.

Naoki's photometry is based on image subtraction. Tomoki measured all images, and carried out relative photometry. He didn't subtract images, though he did seeing corrections using Alard&Lupton PSF matching algorism.

Two methods roughly give similar results. But Naoki's results give slightly smaller flux than Tomoki's. We haven't understood the reason yet. Some examples are shown in Figures 2. (Gerson will fit both results soon.)
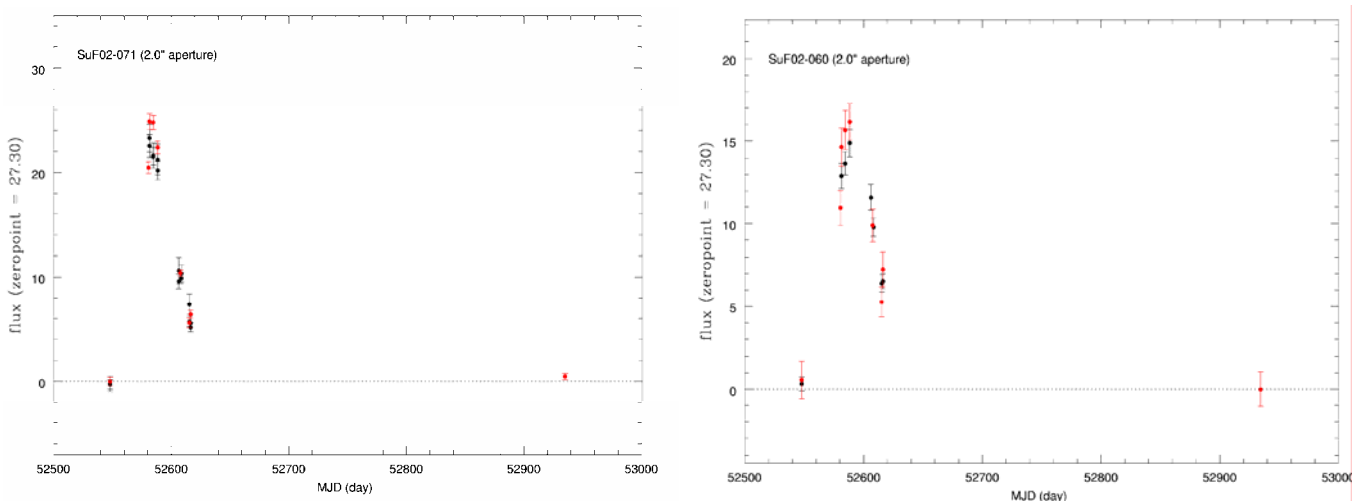

Figure 2   Example light curves by Tomoki(red) and by Naoki(black).

(3) Relative photometry with Subaru runs and AGN samples

Tomoki's photometry gives light curves of all objects with seeing corrections.

Tomoki carried out his relative photometry   in Subaru Spring Deep Field (SDF, 33x27 arcmin^2) where we have 10 epoch observations during 2 years. He found 206 variable objects. About 20 shows SN-like light curves, and most of others are probable AGN. Follow-up spectroscopy of some of variables were carried out with Subaru and Keck as a part of SDF projects, and a few AGN at z~0.8 are confirmed. He show some statistics and structure functions. Tomoki is working on SXDS field, though the maximum interval of the observations is 1 year.