The results and the spin-offs of SNOW@site program

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Abstract

We introduce the results and the spin-offs of SNOW@site program. SNOW@site is one of @site programs to search supernovae with the participants. We have performed 15 times and the number of participants is 188. From the answered questionaires we are developing the program continually. In the preparatory stages we discovered SN 2007ig in Sep., 2007. Our partner Kuma Kogen Astronomical Observatory also discovered SN 2008L in Jan., 2008. We establish enhanced partnerships with each other and we are calling on more collaborators to join us.

Key words: education, public outreach, @site program, supernovae survey

1.   SNOW @site

"@site program" is one of the most important activities at Nishi-Harima Astronomical Observatory (NHAO). It has been developed for both educational effects and scientific results (e.g. Sakamoto et al. 2005). OSETI (Optical Search for Extra-Terrestrial Intelligence), 3D-Project and SNOW are performed as sample themes of NHAO@site program (see Narusawa & Morimoto 2007 for OSETI). We also are ready to accept proposals from outside researches.

SNOW@site is one of @site programs and its feature is to search supernovae with the participants. SNOW is short for SuperNovae Observing Web (Yamaoka et al. 2002). The purpose is to determine Type Ia SN rate in galaxy clusters. Fig. 1 shows snapshots of SNOW@site lined up by the following menu:

Step 1. Participants fill the camera with LN2 together.

Step 2. We lecture about a supernova. The participants are also free to ask the researcher about the specialized theme or astronomy directly during this program.

Step 3. Participants operate the NAYUTA telescope and take images with MINT themselves.

Step 4. They search supernovae by comparing a taken image and a reference image. It has a potential to bring a new discoverer of a supernova among participants as a matter of course.

After the program we have questionnaires for the participants including the following questions:

- What triggered your participation?
- What do you think acout the difficulty level?
- What do you think about hours of participation?
- Do you get interested in astronomy (SN)?
- Do you want to entry again?
- What other themes are you interested in?

As of this writing, we have performed 15 times and the number of participants is 188. The number of answered questionnaires is 89. We are developing the program continually based on the questionnaire result.

Fig. 1. The participants of SNOW@site can operate the NAYUTA telescope and take images of a group of galaxy with MINT (a CCD camera). They subsequently check images taken by themselves whether a supernova is shown or not in that images.

2. The results and the spin-offs

The targets of SNOW@site are clusters and groups of galaxies, namely Abell and HCG (Hickson Compact Group) regions. We had taken these images preliminarily for the participants of SNOW@site to use as the reference image. On Sep. 10, 2007 we taken the image of HCG 13 and we found a possible supernova that later came to be named as SN 2007ig in that image (Naito 2007). SN 2007ig is shown in Fig. 2. Our observations were performed successfully and we collected HCG 100 images in digital completely(Fig. 3). It may be a very useful catalogue for the statistical and morphological researches of galaxy. The images also can be seen at the SNOW@site web site[a] . Furthermore our partner Kuma Kogen Astronomical Observatory also discovered SN 2008L on Jan. 14, 2008 (Yamaoka & Fujita 2008). We establish enhanced partnerships with each other. It is the biggest result that SNOW project discovered supernovae and advances the next stage. We are calling on more collaborators to join us.

References

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[a] http://www.nhao.go.jp/∼naito/SNOW/snow.html

Fig. 2. SN 2007ig is located at R.A. = 1h32m19s.81, Decl. = -7o51'35".8 (equinox 2000.0), which is approximately 9" west and 2" south of the nucleus of MCG -01-5-2.
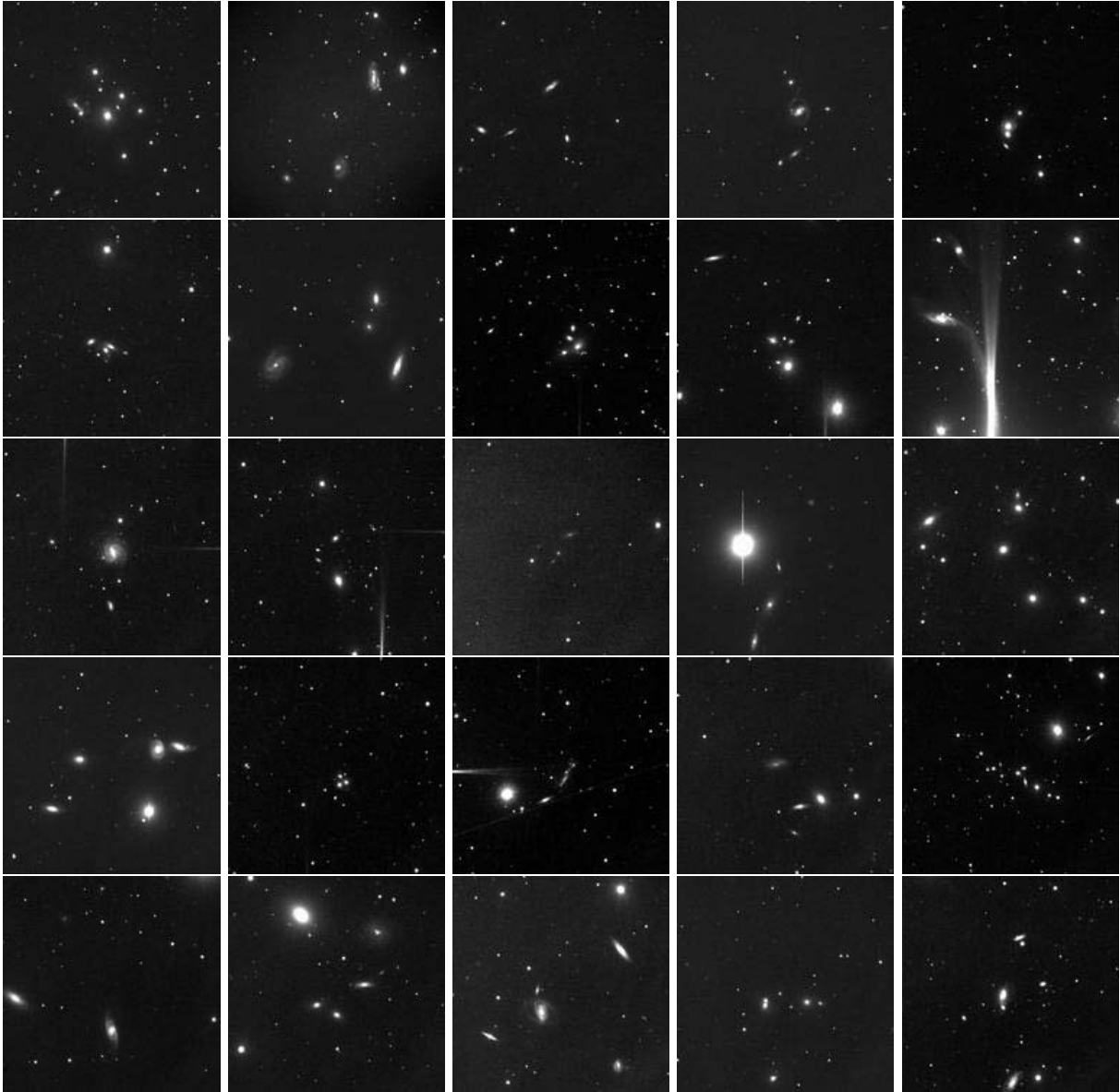
Fig. 3. HCG images taken by the NAYUTA telescope. The images are lined up from top left to bottom right in numerical order (HCG 1 - HCG 25). For HCG 21, the southern part of the region is displayed.
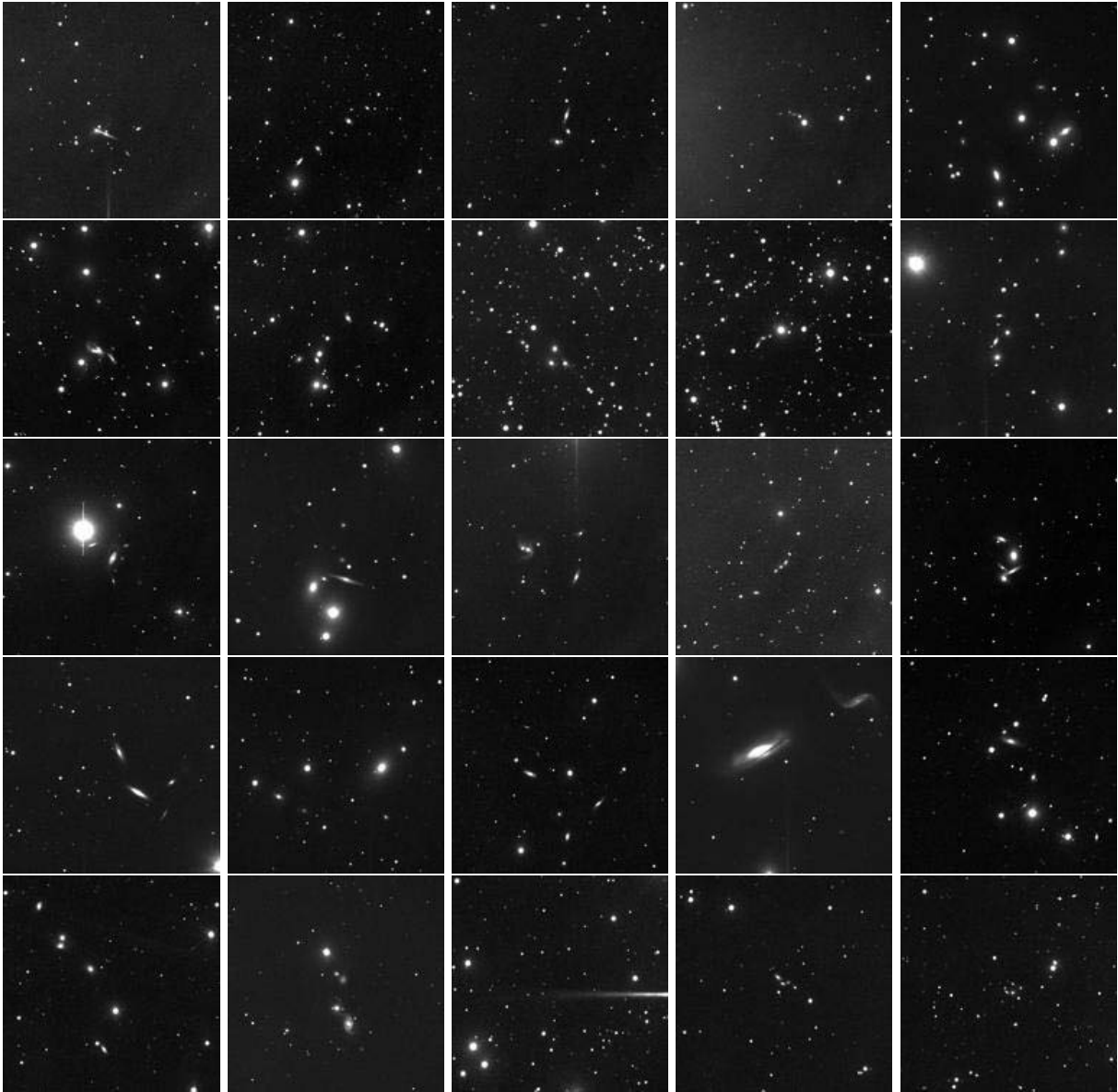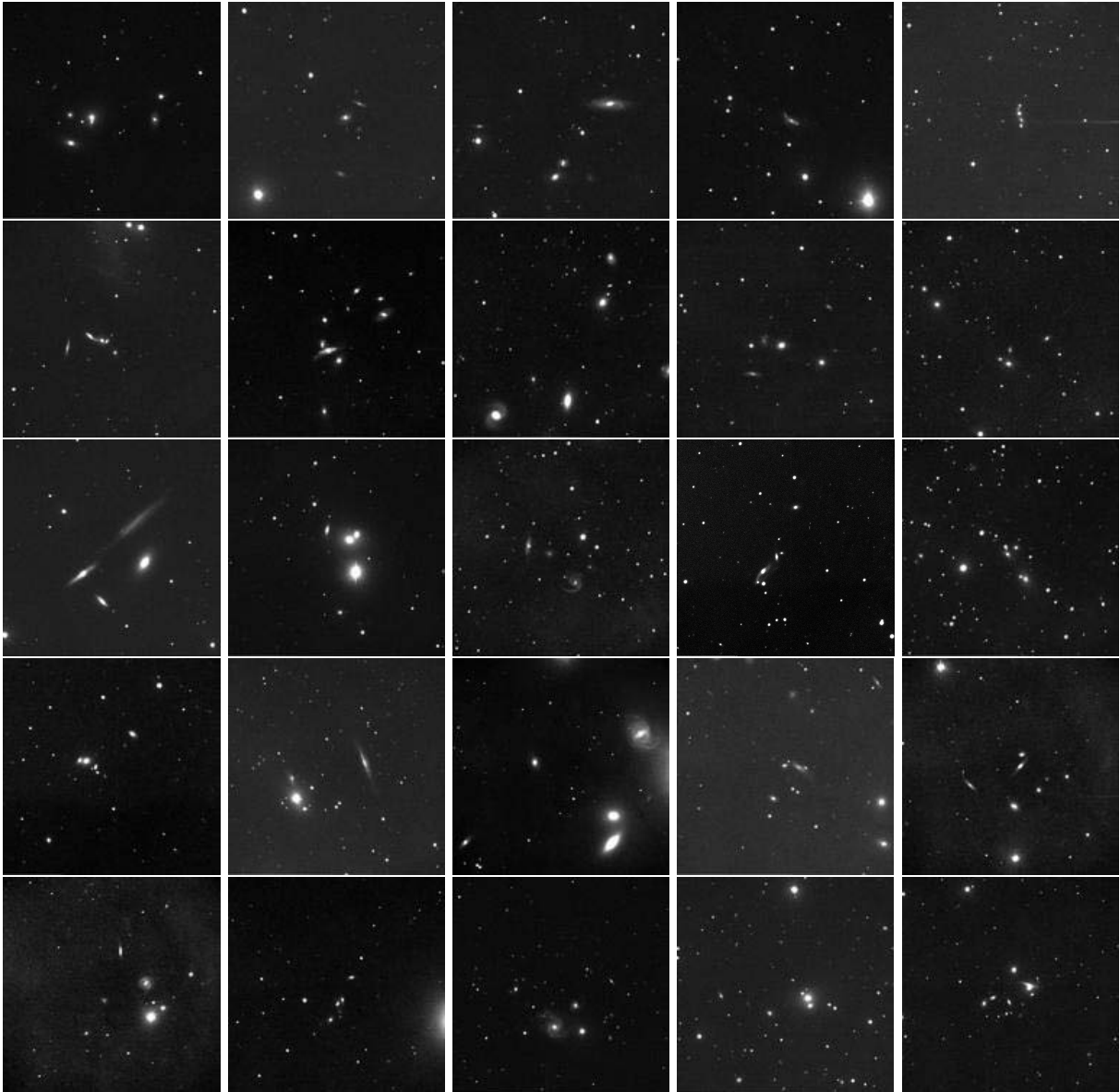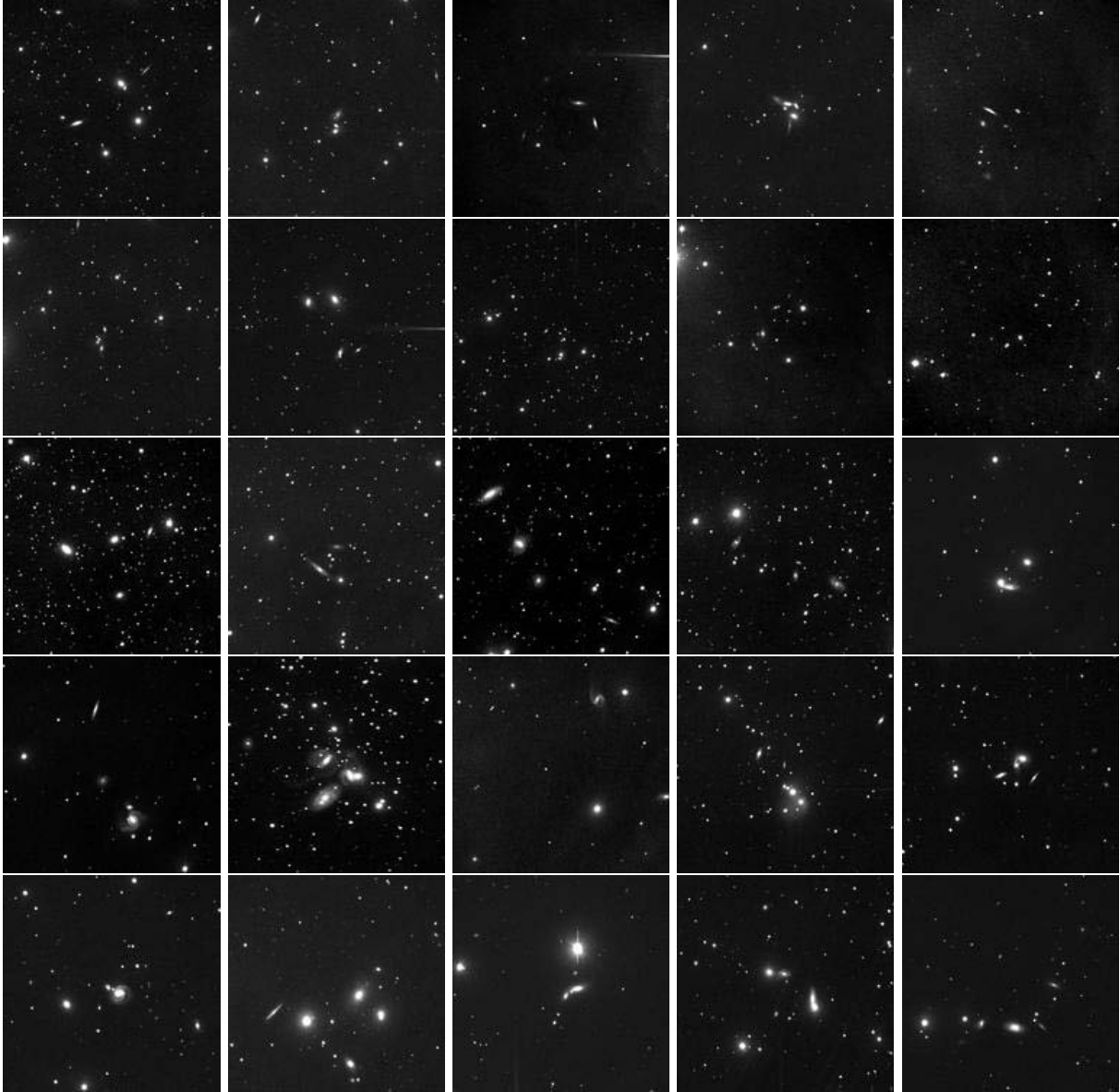
Fig. 3. continued (HCG 26 - HCG 50)

Fig. 3. continued (HCG 51 - HCG 75)

Fig. 3. continued (HCG 76 - HCG 100)