Observation data at JAXA's Bisei Spaceguard Center

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The following is a description of observation data using the 1-m telescope at Bisei Spaceguard Center during the period from March 2007 through March 2017.

1. The file name of the data

Each data is given a file name indicating the date and the coordinate value, as follows.

File name: 1_22222222222_33333333_4444_5.fits

- The "1" part originally indicates the tracking method of the telescope. There are two ways, "X" and "A", but they are not strictly different, the sidereal time tracking or the specific object tracking as explained in section 2.
- The "22222222222" part indicates the equatorial coordinates at which the telescope is pointing, in the format HHMMSSnDDMM. HHMMMSS indicates hours, minutes, and seconds of the right ascension (S may be the first digit only), and DDMM indicates degrees and minutes of the declination. The "n" between HHMMSS and DDMM indicates the Northern Hemisphere (declination is +) and it will be “s” when the Southern Hemisphere (declination is -).
- The "333333" part indicates the date (UTC) when the data was obtained. For example, "170105" means January 5, 2017.
- The "4444" indicates a number in numerical order of continuous observations of the same coordinate area: "0000" for the first one, "0001" for the second one, and so on. Even if the data is from the same area, when the coordinate value (the "22222222222" part) changes even slightly, the number is renumbered from 0000.
- The "5" part indicates the CCD chip number of the mosaic CCD camera. Two types of mosaic CCD cameras are used at different periods: a camera manufactured by Pixel Vision (until January 2009; hereinafter referred to as "PV camera") and a newly developed new-type mosaic camera (after January 2009; hereinafter referred to as "new-type camera").
  In the data obtained by the PV camera, the "5" is one of b1, b2, or b3. Figure

1 shows the schematic layout of b1, b2, and b3 chips with the direction of celestial coordinates. The coordinate near the center of the b2 chip is the coordinate value that corresponds to the "22222222222" part.

In the data obtained by the new-type camera, the "5" part is one of g1 to g4. As in Figure 1, the relationship between the layout of the g1 to g4 chips and celestial coordinates is shown in Figure 2. In this case, the center of the g3 chip is the coordinate value that corresponds to the "22222222222" part.

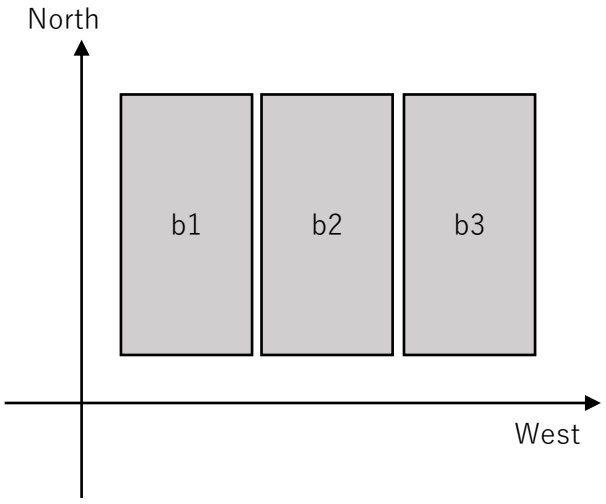

Figure 1. The layout of chips of the PV camera.

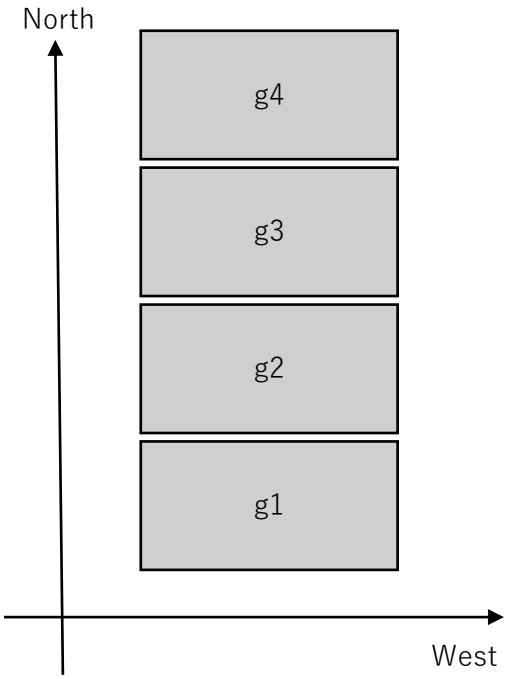

Figure 2. The layout of chips of the new-type camera.

(Example)

The file name of the data observed at the right ascension of 5:35:41 and the declination of -11°23’ with the g3 chip of the new-type camera on March 8, 2015 is:

X_05354s1123_150308_0000_g3.fits

And if the observation has continuous exposures, more data files with the "0000" part numbered consecutively exist in the same directory.

2. The data storage directory

Since file names are assigned according to the above rules, there is a possibility that files with the same date and the same name will be generated. Therefore, each data is divided into groups (usually groups of data obtained through a series of consecutive exposures) and stored. The directory name is named something like "mpNN" or "mpNN_{String}". The "NN" part is a number put in numerical order of the day. The data stored in the "mpNN" directory are the normal survey observation data by the sidereal time tracking. The "{String}" part indicates the name of a specific object, which in most cases is the personal name of a near-Earth object candidate discovered at other observatories in the world on that day or the few days before. Observations of the "mpNN_{String}" pattern are made while tracking the telescope for the movement of the object. Therefore, the stellar image is trailed (extended). In the "mpNN_{String} " pattern, the data of g1, g2, and g4 chips other than g3 chip may not be stored because the observation is targeting only a specific object.

3. Data specifications

- Observation site: Bisei Spaceguard Center Large Observation Building (1-meter telescope dome)
  East Longitude : 133°32'39"
  North Latitude : 34°40'21"
  Elevation : 463 m

- Filters

  Filters described in the header are W, C, V, G, R, I, and Z.

  W: Wideband filter (490-910 nm)
  C: Same as W
  V: Johnson V filter (before Jan 2009)
  G: SLOAN/SDSS g' filter (after Jan 2009)
  R: Cousins Rc filter (before Jan 2009)
  R: SLOAN/SDSS r' filter (after Jan 2009)
  I : Johnson IJ filter (before Jan 2009)
  I : SLOAN/SDSS i' filter (after Jan 2009)
  Z: SLOAN/SDSS z' filter (after Jan 2009)

- Number of CCD pixels, pixel scale
  PV camera : 1024 x 2048 pix, 2.110"/pix (2 x 2 binning)
  New camera : 4169 x 2048pix, 1.058"/pix (without binning)
  : 2087 x 1024pix, 2.117"/pix (with 2 x 2 binning)