

# Known problems, issues, and their solution

## CDK20 and the GM 4000 mount:

### The mount does not stop slewing

**Description of the problem:** Using the handheld terminal or *Maxim DL*, the mount moves to the target position, but does not start tracking and instead remains in the slewing phase.

**Solution:** The problem seems to be due to an interaction between the handheld terminal and *Maxim DL*. The solution is to disconnect the telescope in *Maxim DL* and then reconnect it. It also helped to click on Abort in the **Telescope** tab in the **Observatory** control within *Maxim DL* and then slew to the object again.

### Loss of the alignment

**Description of the problem:** The current alignment has been lost, e.g. by an incorrect operation (delete Alignment).

**Solution:** Restore a previously saved alignment. If such an alignment exists, it can be selected with:

```
MENU - Alignment - Align Database - Load Model
```

If there is no saved alignment, you will have to [create a new alignment](#).

### Problems with finding objects

**Description of the problem:** The telescope does not point to the selected objects or to wrong ones.

**Solution:** Possible solutions are in this order:

- check date and time (is DST set - only during summer) and the location in the settings of the hand terminal
- restore an old alignment (see above)
- create a new alignment (see [here](#)).

### Problems with the tracking speed

**Description of the problem:** The tracking speed does not automatically adjust to the target, i.e. the moon.

**Solution:** By default, the following option should be enabled:

```
Menu - Drive - Follow Obj
```

If it is not, the automatic switching between different tracking modes does not work.

## Problems with the park position

**Description of the problem:** The telescopes does not move to the default park position (pointing to the northern celestial pole).

**Solution:** The solution is to switch back to the default park position via:

Menu - Alignment - Park Position - Default park

## Noise similar to a ship horn

**Description of the problem:** The telescope makes a loud noise similar to a ship horn when it is moved around the right ascension axes. The noise can be so loud that it is noticeable in the whole building. So far the problem only occurred at temperatures close to the freezing point.

**Solution:** The problem is a result of a too high pressure of the worm on the worm wheel. Therefore, this pressure needs to be reduced. A detail description how to do this can be found among the manuals in the lab-course office and in the svn.

## Dome:

### Dome wall vs. telescope I

**Description of the problem:** The dome's wall obscures the view of the telescope to the sky. This happens when the dome does not follow the pointing of the telescope, i.e. the open shutter is not in phase with the telescope.

**Solution:** There are magnets in the moving part of the dome and the dome wall, so that the dome control can register the current orientation of the dome. From time to time the dome must be recalibrated, which can be achieved by fully rotating the dome for one or better two rounds. To start that, first disconnect the dome and the telescope by means of the hand terminal:

MENU - Settings - Dome - Control - No Dome

Then the dome can be rotated with the dome remote control. Afterwards, the dome and telescope need to be reconnected again:

MENU - Settings - Dome - Control - Dome On GPS

### Dome wall vs. telescope II

**Description of the problem:** The motor that drives the dome rotation can be heard but the dome does not rotate.

**Solution:** First, push in the red emergency button at the control unit next to the door (see [this photo](#)). Second, disconnect the dome from the telescope by means of the hand terminal:

```
MENU - Settings - Dome - Control - No Dome
```

Now pull out the emergency button again. Try to move the dome with the help of the remote control. Alternately press the azimuth buttons until the dome freely rotates again. Afterwards, reconnect the dome and the telescope:

```
MENU - Settings - Dome - Control - Dome On GPS
```

## Shutter vs. hatch I

**Description of the problem:** The shutter of the dome does not close completely and a small gap remains between the shutter and the hatch.

**Solution:** Open the shutter until it is possible to move the hatch. Open the hatch a bit and close it again. Afterwards, it should be possible to completely close the shutter.

## Shutter vs. hatch II

**Description of the problem:** The shutter or the hatch do not close via the remote control.

**Solution:** One can use the following command on the hand terminal to completely close the dome:

```
MENU - Settings - Dome - Close Shutter
```

Afterwards, it should be possible to move the shutter and the hatch again via the remote control.

## Telescope:

### Wobbling Camera/spectrograph

**Description of the problem:** You may find that the camera or spectrograph still wobble or rotate despite your efforts to secure them to the telescope.

**Solution:** The screws for attaching devices could be rusty and therefore, it is hard to tighten them. Thus, the screws should be completely unscrewed. After checking them they should be cleaned or if they are too damaged, they should be exchanged. In general it can't be bad to unscrew them from time to time to check them. In the worst case the screw thread is damaged and then it has to be cleaned or the thread needs a new cut.

## C11/C14 and the CGE-Pro mount:

### No Response-Errors

**Description of the problem:** The hand terminal shows the error message *No Response 16* or *No Response 17*.

**Solution:** These error codes appear in case the communication between control unit and engines of the right ascension axis and/or declination axis is disturbed. First, check if all cables are correctly plugged in. If that didn't solve the problem, use contact spray on the connectors of the plugs (attention: Do not directly spray into the sockets). If the problem persists, the hand terminal is probably broken.

### Loose bolts at the electronic box of the CGE-Pro

**Description of the problem:** The sockets for the right ascension and the declination cable of the electronic box are loose and it is not possible to tighten them.

**Solution:** The bolts that hold the sockets are countered from inside the box by means of nuts. Therefore, it is inevitable to open the box. The cover of the box is bolted into the upper part of it. Since the cover is plain with the exception of a few boreholes, it could be a bit troublesome to remove it. One can try to turn the cover by means of a screwdriver but one has to be very careful in order not to damage the electronics. However, the best option is to build a special tool for this purpose. In each case a certain amount of strain is necessary to open the electronic box. Therefore, it probably is a good idea to get some help, so that somebody or something can hold the box while turning the cover. When the box is open, the bolts of the sockets can be easily tightened. Subsequently, the electronic box can be closed again. It is important to carefully tighten the cover. Otherwise, it might be not possible to attach the mechanics to the electronic box when the mount is set up.

## C9 and the advanced GT mount:

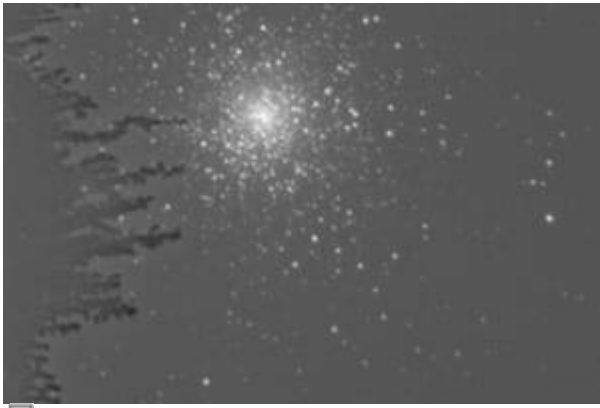
### Telescope pointing

**Description of the problem:** Instead of driving towards objects correctly and precise, the telescope points to the ground. Furthermore, the movements of the telescope (along larger distances) are (very) slow.

**Solution:** It's likely that the power supply is causing the problem. Try a different power supply.

## Cameras:

## Ice on the camera



Exposure of the cluster M15 with the ST-8. The left side clearly shows icing on the CCD.

**Description of the problem:** The CCD chip of the camera has experienced icing, see image on the right.

**Solution:** The cameras' interior is not in a vacuum and moisture can get in, causing icing on the cooled CCD chip. To prevent this, the cameras have dry cartouches with desiccants. If icing appears, the cartouches need to be regenerated ([see this article](#)). During that observational night, wait for approximately one hour until the ice sublimates from the CCD chip.

## ST-8: shutter error

**Description of the problem:** CCDops reports shutter error while taking the first images after switching on the camera.

**Solution:** In this case the communication between the camera and CCDops is disturbed or the sensors for the shutter position do not work properly. Therefore, the software does not know whether the shutter is closed or not. It also could be that the shutter is indeed not moving as expected. In each case, it is often sufficient to switch off the camera and to disconnect it from the power supply. However, sometimes it is necessary to detach the camera from the telescope and to very carefully shake the camera a bit. Afterwards, the sensors of the shutter usually deliver proper data again.

## CCDops does not find the filter wheel

**Description of the problem:** CCDops does not find the filter wheel of the STF8300 camera although the filter wheel is rotating when the power is switched on.

**Solution:** The filter wheel needs to be reinitialized. The corresponding menu can be found via *Filter* and *Filter Setup*. Select the "FW-5" filter wheel from the drop down menu and confirm the settings with a click on the *OK* button. Afterwards the filter wheel should work again.

# Manuals

Current user's manuals are in the laboratory course room (2.009):

Manual	Comment
10Micron GM 4000 QCI mount	Blue folder
10Micron GM 2000 QCI mount	Folder (mount not available)
Celestial Globe	Folder
VNC	Folder
T-Point	Software hand book
PC-Control of the mounting GM 2000	Folder, for "Perseus", "The Sky", and "Cartes du Ciel"
SBIG Users Guide: CCDOps	Ring bond, for CCDOps Version 5
SBIG Operating Manual CCD Cameras	Ring bond, for ST-7XE, ST-8XE, ST-9XE, ST-10XE, ST-10XME, and ST-2000XM
SBIG CCD-Camera manual (german)	Folder, Baader, for cameras and control/data reduction software
SBIG AO-7 Manual (1997)	Loose paper collection, Manual for adaptive optics
SBIG AO-7 Manual (2003)	Loose paper collection, Manual for adaptive optics
Manual for automatic observation domes	Folder, from Baader
TCF-S Manual	Folder, (printed from CD?) manual for focusing
Visual Spec Manual	Folder, data reduction software for spectra (Windows)
DADOS Manual	Folder for the spectrograph
Celestron Advanced Series GT Manual	Manual for the mobile telescope
Folder with various short manuals	e.g. Micro-Guiding-Crosshair-Ocular, USB-equipment
Panasonic Toughbook CF-31	Manual

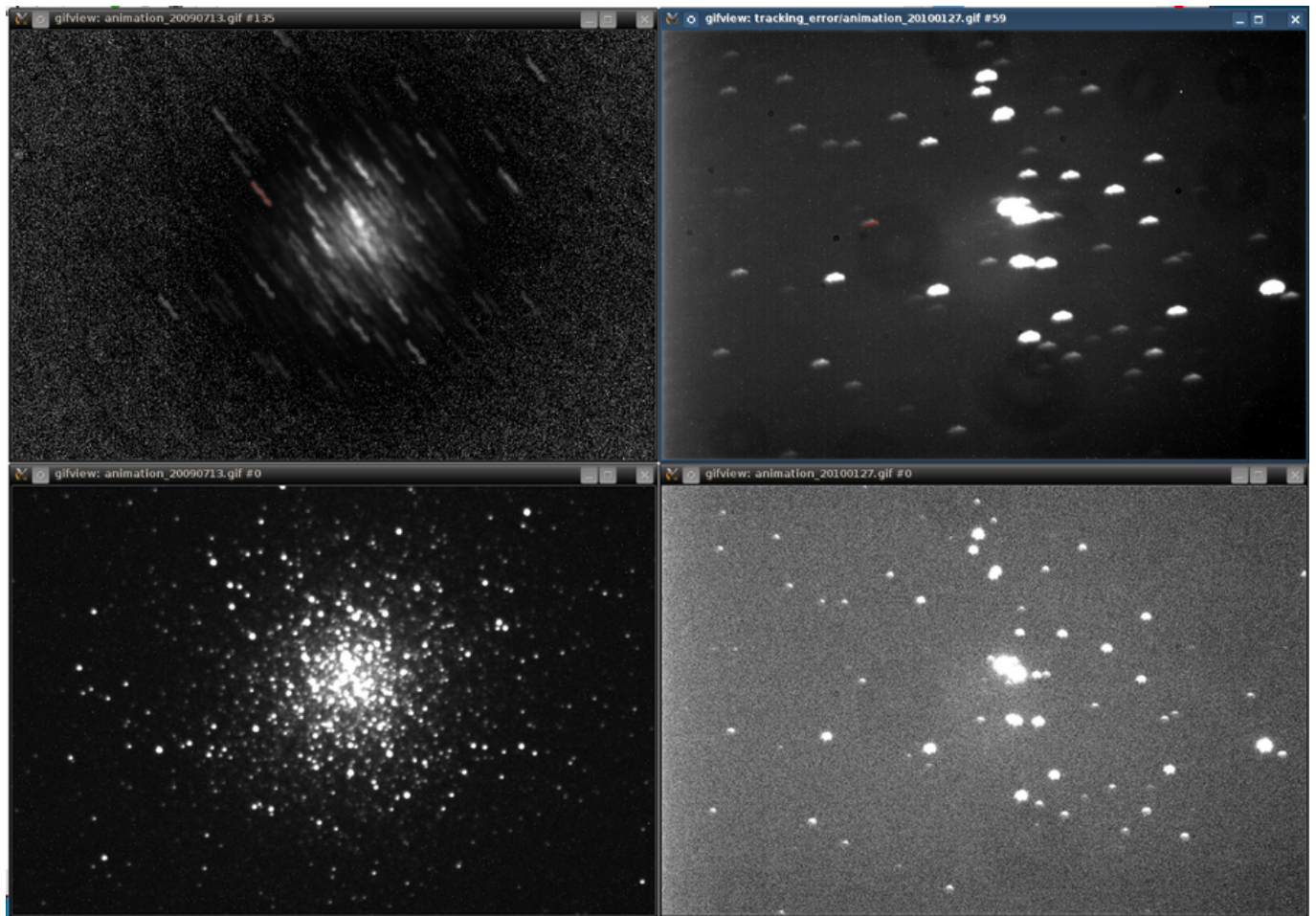
## Known problems that we are working on

### Tracking error

The following image illustrates the telescope's tracking problem. On the left panels, you can see the globular cluster M 13. The lower left panel shows an exposure of 10s, which gives a fair result. The upper left panel combines 135 exposures of each 10s, so approx. 35 minutes in total. The stars are clearly smeared and describe a fine zig-zag line (length of about 1/2').

The right panels show the exposures of an open cluster of 30s exposure time. Again, the lower right panel shows one exposure, the upper right the combinations of all following exposures.

Note: The exposures were taken with the ST-8 and are not fully reduced here.



Tracking errors of a globular cluster (M 13, left panels) and an open cluster (right panels)

Invalid Link

300 exposures of NGC 6819 at intervals of 5 seconds, dated 15 May 2014

Invalid Link

201 exposures of NGC 6819 at intervals of 5 seconds, dated 8 August 2014, after calibration of the [Periodic Error Control](#)

Invalid Link

300 exposures of NGC 6819 at intervals of 1 second, dated 15 May 2014

Invalid Link

805 exposures of NGC 6819 at intervals of 1 second, dated 8 August 2014, after calibration of the [Periodic Error Control](#)

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