

Astrometric calibration using Aladin

Author: F. Rothmaier

Software: [Aladin](#)



The Aladin Sky Atlas is a very powerful Virtual Observatory application enabling its users to visualise digitised astronomical images, to superimpose entries from astronomical catalogues or databases, and to interactively access related data and information from numerous astronomical databases and archives.

Certainly, an image can only be overlaid with catalogues or other images if it has an astrometrical calibration. If you do not know the sky region of an uncalibrated image, an automatic calibration tool like [Astrometry.net](#) might be a good choice. If you know, however, the location of an image on the celestial sphere, [Aladin](#) provides a fast and reliable method to calibrate it by using a reference image.

This tutorial explains step-by-step how to perform such an ad-hoc astrometric calibration using [Aladin](#).

Learn how to calibrate an image with Aladin

1. Load an uncalibrated image into Aladin:

- Launch [Aladin](#).
- In Aladin's menu, click on **File** → **Open URL...** This will open the **Server selector** window. In the text field below "Specify a filename or an URL and press the SUBMIT button" enter the URL <http://docs.g-vo.org/astropics/M57RingNebula.jpg> followed by a click on the **SUBMIT** button to open an uncalibrated image of the Ring Nebula (Messier 57). (Alternatively, you can open a **web browser** with <http://docs.g-vo.org/astropics/>, download the file *M57RingNebula.jpg* and access it via Aladin's menu: **File** → **Open local file...**).

2. Find a calibrated reference image:

- Click on  in the menu to open the **Server selector** window again. In the left column ("Image servers"), choose **Aladin images** and then type **M57** in the "Target" field and **15 arcmin** in the "Search cone" field. Press the **SUBMIT** button.
- A list of images is now presented to you. Scroll down a little bit. A good choice would be an image from the Palomar Observatory Sky Survey I in the blue region of the visible spectrum, e.g. the one in the row

```
POSSI 0-DSS2(0.41 um) 13.0'x13.0' 335 1.1"/pix 1951-07-05T07:09:00
```

From left to right, this line refers to the observing program name, the filter name, the image size in α and δ , the observation name, the angular pixel size, and the date/time of the observation.

- When you click on the row, the **Data Info Frame** is opened. Load the image into Aladin's main window by pressing **LOAD**.

3. Calibrate your uncalibrated image:

- Split the main window into two sub-windows by using the second button from left of the "multiview" capability . Make Aladin display your uncalibrated image in the left and the calibrated image in the right sub-window.
- Choose **Image** → **Astrometrical calibration...** in the menu. In the **Astrometrical calibration** window select the option **by matching stars**.

- If you are sure about corresponding stars in the two images, click on a star in the uncalibrated image followed by a click on the calibrated source. Repeat the game for at least five objects. For each mouse click, Aladin fills the table in the calibration board.
- When you feel good about your objects selected, press the **CREATE** button to finalise the calibration.

4. You are done:

- If you hover your mouse over the image on the left, you see that coordinates are indicated in the “Location” field above the main window (before there was a “No astrometrical reduction” here).
- Click on the “match” icon (to the right of the “multiview” capability) to view the two images in the same orientation.
- If you want to save your freshly calibrated image on disk, click on and select the option **Export some planes**.

