

Using ASTAP plate solving with BackyardNikon/BackyardEOS

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Note: These notes describe how I got ASTAP working with BackyardNikon with my equipment. I would welcome corrections. I am not able to provide any further user support for either piece of software.

The key point

Unlike some other imaging software, BackyardNikon and BackyardEOS do not know your optical configuration. Accordingly, you must tell ASTAP the field of view, or tell ASTAP to determine it automatically. This document tells you how.

For general information, see also the documentation about how to use ASTAP with other imaging programs at <https://www.hnsky.org/astap.htm#platesolve2>.

Installation

Purchase from <https://www.otelescope.com/> and install an edition of BackyardNikon or BackyardEOS that supports plate solving.

Install ASTAP (free from <https://www.hnsky.org/astap.htm>) and its H18 star catalogue. (If short of disk space, you can use the H17 catalogue if you are using a small instrument, under 1000 mm focal length.)

Install Cartes du Ciel (free from <https://www.ap-i.net/skychart>). This is for choosing celestial objects to center on, so you don't have to enter their coordinates. You do not need to set up telescope control in Cartes du Ciel.

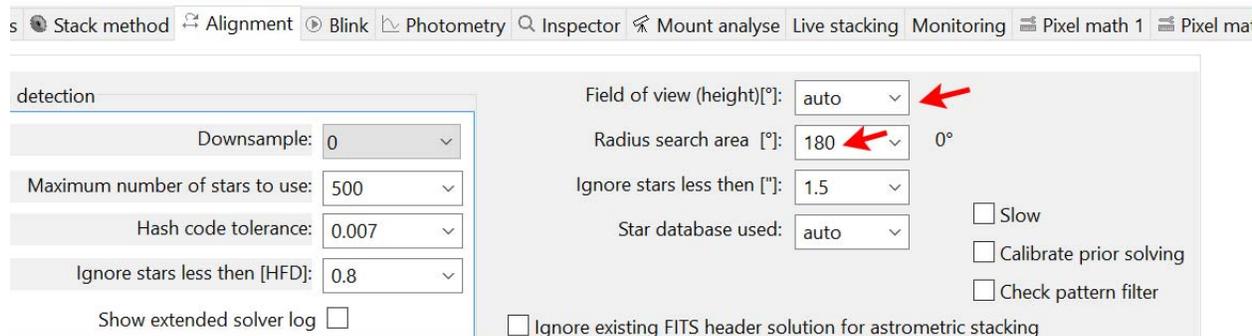
In BackyardNikon or BackyardEOS, Imaging or Preview window, click Advance Mode (at lower right) and put in the location of ASTAP.exe.



Usage

You are going to need to open both the ASTAP app and BackyardNikon/BackyardEOS, and it doesn't matter in which order you open them. Neither one needs to remain open when you are not actually using it.

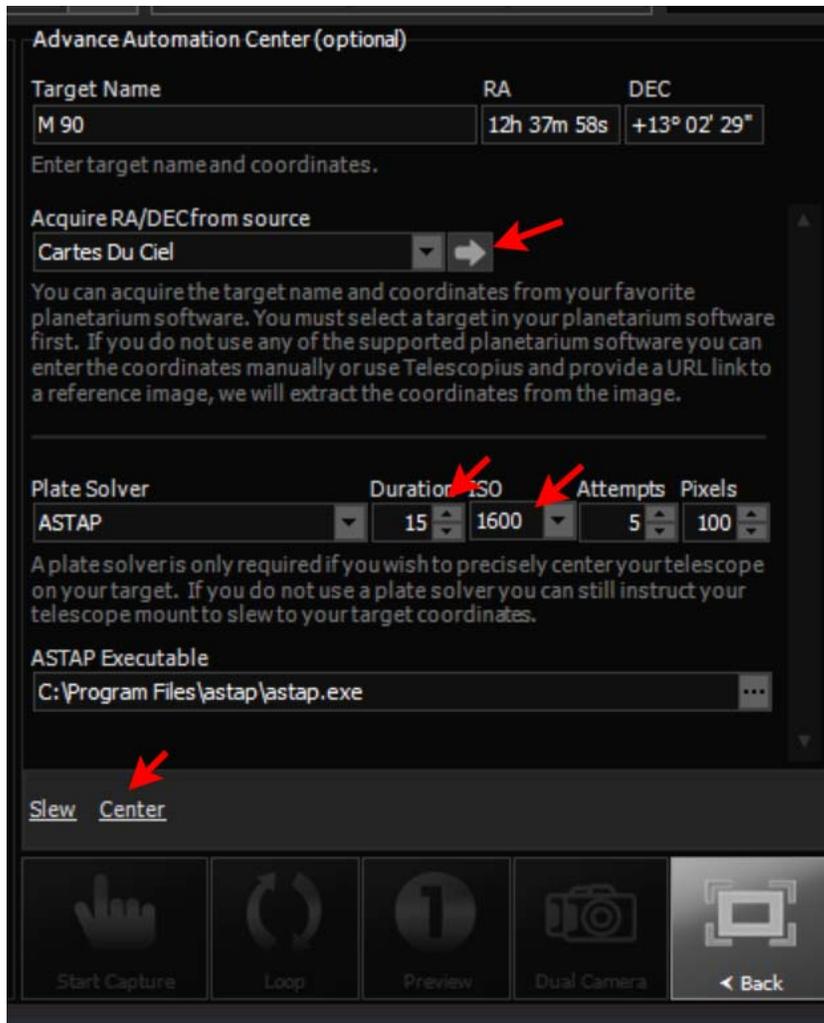
Open the ASTAP app, open the Stack window, Alignment tab, and put in the field of view of your camera/telescope combination, or choose "auto." ASTAP will remember this setting. Also choose 180-degree search radius.



- Solving on "auto" takes much longer than solving with a given field of view.
- Note: ASTAP will not remember "auto." Once it has determined the field of view automatically, it will remember it as a fixed setting, and you will need to change it, or go back to "auto," when you are going to use different optics.
- You can open ASTAP and check or change this setting at any time, whether or not BackyardNikon/BackyardEOS is running, and you can close ASTAP at any time. BackyardNikon/BackyardEOS will use ASTAP, with the settings you have put in, whether or not the ASTAP app is open.

In BackyardNikon/BackyardEOS, in the Imaging window:

- Preferably, load the exposure sequence you are going to use at this point. You can load or set it later, but this is the most convenient point.
- Then open Advance Mode at the lower right of the screen.



- Type in the coordinates of the object (R.A. and Dec., epoch of current date, *not* 2000) OR open Cartes du Ciel and find and select the object, then tell BackyardNikon/BackyardEOS to acquire the coordinates from Cartes du Ciel. (Do that by clicking on the arrow.) This will also put in its name.

- Choose “Center.” The telescope will slew to the object, take a picture, solve it, and slew again as needed to center the object.

If plate solving fails

- Use a generous plate solve exposure. The default is 5 seconds at ISO 1600 and is usually not enough. At f/4 to f/7 in a poor star field, I use 15 to 30 seconds at ISO 1600. In a richer field, a shorter exposure might suffice.
- When the plate solve picture is displayed, make sure the tracking and focus are reasonably good. A poorly tracked or focused picture will not solve. If you had momentary bad tracking, just press Center again to try again.
- See the advice given by ASTAP at <https://www.hnsky.org/astap.htm#platesolve2>, including the advice pitched mainly at users of other imaging software. Much of the troubleshooting is the same for all.