

---

# **pyastrometry**

***Release 0.1***

**Michael Fulbright**

**Nov 01, 2020**



**CONTENTS:**

<b>1</b>	<b>Using pyastrometry_cli_main.py</b>	<b>1</b>
1.1	Introduction . . . . .	1
1.2	Invocation . . . . .	1
1.3	Command Details . . . . .	1
1.4	Using an astrophile . . . . .	3
<b>2</b>	<b>pyastrometry</b>	<b>5</b>
2.1	pyastrometry package . . . . .	5
<b>3</b>	<b>Indices and tables</b>	<b>7</b>
	<b>Python Module Index</b>	<b>9</b>
	<b>Index</b>	<b>11</b>



## USING PYASTROMETRY\_CLI\_MAIN.PY

### 1.1 Introduction

The script “pyastrometry\_cli\_main.py” handles taking an image and plate solving it to find the current position of the mount.

### 1.2 Invocation

The invocation of autofocus\_auto\_star.py is:

```
usage: pyastrometry_cli <operation> [<args>]

The accepted commands are:
  solvepos      Take an image and solve current position
  solveimage <filename>  Solve position of an image file
  sync          Take an image, solve and sync mount
  slewsolve <ra> <dec>  Slew to position and plate solve and slew until within
  ↪threshold

Astromentry CLI

positional arguments:
  operation  Operation to perform

optional arguments:
  -h, --help  show this help message and exit
```

### 1.3 Command Details

**solvepos:** Takes an image with the camera and solves it. Drivers can be specified via a astroprofile or command line arguments.

```
usage: pyastrometry_cli solvepos [<args>]

Solve Parameters

optional arguments:
  -h, --help          show this help message and exit
  --profile PROFILE    Name of astroprofile
```

(continues on next page)

(continued from previous page)

```
--mount          Name of mount driver
--camera         Name of camera driver
--exposure       Exposure time
--binning        Camera binning
--solver SOLVER  Solver to use
--pixelscale PIXELSCALE
                  Pixel scale (arcsec/pixel)
--downsample DOWNSAMPLE
                  Downsampling
--outfile OUTFILE Output JSON file with solution
--force          Overwrite output file

Valid solvers are:
    astrometryonline
    astrometrylocal
    platesolve2
```

**solveimage:** Solves an existing image.

```
usage: pyastrometry_cli solveimage <filename> [<args>]

Solve Parameters

optional arguments:
  -h, --help          show this help message and exit
  --profile PROFILE   Name of astro profile
  --solver SOLVER     Solver to use
  --pixelscale PIXELSCALE
                      Pixel scale (arcsec/pixel)
  --downsample DOWNSAMPLE
                      Downsampling
  --outfile OUTFILE   Output JSON file with solution
  --force             Overwrite output file

Valid solvers are:
    astrometryonline
    astrometrylocal
    platesolve2
```

**sync:** Takes an image with the camera and solves it and syncs mount to solution.

```
usage: pyastrometry_cli sync [<args>]

Solve Parameters

optional arguments:
  -h, --help          show this help message and exit
  --profile PROFILE   Name of astroprofile
  --mount            Name of mount driver
  --camera           Name of camera driver
  --exposure         Exposure time
  --binning          Camera binning
  --solver SOLVER    Solver to use
  --pixelscale PIXELSCALE
                    Pixel scale (arcsec/pixel)
  --downsample DOWNSAMPLE
                    Downsampling
```

(continues on next page)

(continued from previous page)

```

--outfile OUTFILE      Output JSON file with solution
--force                Overwrite output file

Valid solvers are:
  astrometryonline
  astrometrylocal
  platesolve2

```

**slewsolve:** Given an RA/DEC position slew to that position and refine slew using plate solving.

```

usage: pyastrometry_cli slewsolve <ra> <dec> [<args>]

Solve Parameters

optional arguments:
  -h, --help            show this help message and exit
  --profile PROFILE      Name of astroprofile
  --mount                Name of mount driver
  --camera               Name of camera driver
  --exposure             Exposure time
  --binning              Camera binning
  --solver SOLVER        Solver to use
  --pixelscale PIXELSCALE
                        Pixel scale (arcsec/pixel)
  --downsample DOWNSAMPLE
                        Downsampling
  --outfile OUTFILE      Output JSON file with solution
  --force                Overwrite output file

Valid solvers are:
  astrometryonline
  astrometrylocal
  platesolve2

```

## 1.4 Using an astroprofile

If specified an astroprofile will be used to get camera and mount driver information as well as the pixelscale used for platesolving.





## PYASTROMETRY

### 2.1 pyastrometry package

#### 2.1.1 Submodules

#### 2.1.2 pyastrometry.ASTAP module

#### 2.1.3 pyastrometry.AstrometryNetLocal module

#### 2.1.4 pyastrometry.Pinpoint module

#### 2.1.5 pyastrometry.PlateSolve2 module

#### 2.1.6 pyastrometry.PlateSolveSolution module

**class** pyastrometry.PlateSolveSolution.**PlateSolveSolution** (*radec, pixel\_scale, angle, binning*)

Bases: object

Stores solution from plate solve engine

##### Parameters

- **radec** (*SkyCoord*) – RA/DEC of center of image.
- **pixel\_scale** (*float*) – Pixel scale in arc-seconds/pixel
- **angle** (*Angle*) – Sky roll angle of image.

Create solution object

#### 2.1.7 pyastrometry.Telescope module

#### 2.1.8 Module contents



## INDICES AND TABLES

- `genindex`
- `modindex`
- `search`



## PYTHON MODULE INDEX

### p

`pyastrometry`, [5](#)

`pyastrometry.Pinpoint`, [5](#)

`pyastrometry.PlateSolveSolution`, [5](#)



## INDEX

### M

module

    pyastrometry, 5

    pyastrometry.Pinpoint, 5

    pyastrometry.PlateSolveSolution, 5

### P

PlateSolveSolution (class in *pyastrometry.PlateSolveSolution*), 5

pyastrometry

    module, 5

pyastrometry.Pinpoint

    module, 5

pyastrometry.PlateSolveSolution

    module, 5