



Las Cumbres Observatory Global Telescope

Observing Asteroids

Using the Asteroid Portal



FAULKES TELESCOPE

Author: Daniel Duggan

Observing Asteroids



Observing Asteroids

Using the Asteroid Portal

Introduction

The aim of the asteroid portal is to assist collaboration between different schools and groups undertaking the asteroid observing programme. It provides an area where all asteroid observations can be recorded and accessed.

It allows you to submit any asteroid observations, to search for existing observations that have been submitted and to download the FITS files for previously submitted observations.

There are three levels for users in the asteroid portal, these instructions will walk you through each level.

Registering

First, you need to register with the portal. Go to the portal home page at:

<http://portal.faulkes-telescope.com/asteroid>

There is a menu on the left hand side of this page, of which one of the items is Register.

When you click on this link you will be taken to a very short page with the following fields:

Username*:	<input type="text"/>
Password*:	<input type="password"/>
Subscribe*:	<input type="checkbox"/>
<input type="button" value="Register"/>	

You must register with your RTI username and password, i.e. the username and password you log in with to use the telescope.

Tick the **Subscribe** box and click **Register**.

Your account will then go into a **Pending** status, the FT Team will be notified of your registration and will approve your account.

When your account is activated, your account type will be that of **Ordinary User**. This allows you certain privileges, namely the ability to submit FITS Headers and MPC Reports; but it does not allow you to send asteroid positions to the MPC (Minor Planet Center).

Submit FITS Headers

When you next log in after your account activation, you will notice that the left hand menu has extended. You will be able to see additional links for submitting FITS Headers and MPC Reports.

The first step in submitting asteroid observations is to submit the FITS Headers of all the FITS files you measured an asteroid in. So, if for example you have three asteroid images and measured the asteroid in those three images, you must upload the FITS Header of each image.

The FITS Header can be found in Astrometrica, click on your first image and go to **Image>Display Header**. This will open another window containing the FITS Header; right click on the text and click **Select All**, this will highlight all of the text. Then right click again and click **Copy**.

Now go back to the asteroid portal, right click in the box and click Paste.

You should see a window that looks like this:

Asteroids

Submit the FITS header information for an observation

For each observation that you want to submit data for you must submit the FITS header.

Paste the full contents of the FITS header into this area:

```

SIMPLE = T / A valid FITS file
BITPIX = 16 / Comment
NAXIS = 2 / Number of axes
NAXIS1 = 1024 / Comment
NAXIS2 = 1024 / Comment
BZERO = 24224.6972747756 / Comment
BSCALE = 0.753033444937105 / Comment
ORIGIN = 'Faulkes Telescope Project'
OBSTYPE = 'EXPOSE ' / What type of observation
has been taken
RUNNUM = 52 / Number of Multrun
EXPNUM = 1 / Number of exposure within
Multrun
EXPTOTAL= 1 / Total number of exposure
within Multrun
DATE = '2007-01-25' / [UTC] The start date of the
observation
DATE-OBS= '2007-01-25T12:16:47.410' / [UTC] The start time
of the observation
UTSTART = '12:16:47.410' / [UTC] The start time of the

```

Upload Clear

Then click **Upload**.

You will get a confirmation message saying your FITS Header has been successfully uploaded, unless somebody else has uploaded the same FITS Header, in which case it will tell you. You cannot upload the same FITS Header twice, so if this happens it's not possible to upload it again. Click on **Submit FITS Header** in the left hand menu again and repeat the steps above for the other FITS files you have.

Click on **Submit FITS Header** in the left hand menu again and repeat the steps above for the other FITS files you have.

Submit MPC Report

After you have done the **Astrometric Data Reduction** in Astrometrica and measured the position of your asteroid, you can view the MPC Report.

To do this, go to **Internet>MPC Report**. This will bring up a new window with the MPC Report in it. As above, select all of the text and copy it.

Then go back to the Asteroid Portal and paste the whole report into the box provided.

Asteroids

Submit the Astrometrica email text

Paste the full contents of the Astrometrica email into this area:

```

COD F65
CON D. Bowdley, FT Project, School of Physics and Astronomy,
Cardiff University, Cardiff, UK.
[david.bowdley@astro.cf.ac.uk]
OBS D. Duggan
MEA D. Duggan
TEL 2.0-m Ritchey-Chretien + CCD
ACK MPCReport file updated 2007.06.05 15:07:03
AC2 david.bowdley@astro.cf.ac.uk
NET USNO-B1.0
      K06UL6N  C2007 01 25.51183 07 15 41.90 +50 47 51.7
18.3 R      F65
      K06UL6N  C2007 01 25.51281 07 15 42.07 +50 47 52.2
18.2 R      F65
      K06UL6N  C2007 01 25.51369 07 15 42.21 +50 47 52.6
18.1 R      F65
----- end -----

```


Now click **Upload**.

Now comes the hardest part of the process, and that is to match up the FITS Headers you uploaded with the asteroid positions in the MPC Report...

Asteroid astrometric data

This is the data that you entered.

For each asteroid observation please match it to the uploaded FITS header

Common data for all observations					
Observer	D. Duggan				
Measurer	D. Duggan				
	david.bowdley@astro.cf.ac.uk				
Observatory code	F65				
Submission date stamp	C200701				
Match your observations with an uploaded FITS header files					
K06UL6N C2007 01 25.51183 07 15 41.90 +50 47 51.7 18.3 R F65	<input type="text"/>	Obs ID			
K06UL6N C2007 01 25.51281 07 15 42.07 +50 47 52.2 18.2 R F65	<input type="text"/>	Obs ID			
K06UL6N C2007 01 25.51369 07 15 42.21 +50 47 52.6 18.1 R F65	<input type="text"/>	Obs ID			
Recent FITS files					
Obs Date (YYYY-MM-DD)	RA	Dec	Filters	Telescope	OBS ID
2007-01-25.51351	07:15:44.797	+50:48:01.93	clear Bessell-R	Faulkes Telescope North	29302
2007-01-25.51264	07:15:44.757	+50:48:02.07	clear Bessell-R	Faulkes Telescope North	29301
2007-01-25.51166	07:15:44.745	+50:48:01.65	clear Bessell-R	Faulkes Telescope North	29300
2007-05-24.47248	17:16:55.65	-14:28:09.18	clear Bessell-R	Faulkes Telescope North	1932
2007-05-24.46664	17:16:55.647	-14:28:08.84	clear Bessell-R	Faulkes Telescope North	1930
<input type="button" value="Submit"/>					

In the top half of the page you will see your details - observer and measurer of the FITS Files that is specified in the MPC Report from Astrometrica, observation code and the date.

At the bottom half under **Recent FITS Files**, you see the recently uploaded FITS Headers. The task is to match the **OBS ID** of your FITS Headers in this section with the asteroid positions in the top half of the page.

If you are only matching one asteroid, then the easiest way to compare the headers to the asteroid positions is by way of Date.

In my first asteroid position above, I can break down the string of data:

2007 01 25.51183 is the date displayed in the format of year, month and decimal day. This shows that the image was taken just after midday on the 25th January.

07 15 41.90 is Right Ascension

+50 47 51.7 is Declination

18.3 is the **Magnitude**, R is the **red filter** and **F65** is the Observatory Code for FTN. I can also see from the **OBS ID** of the FITS Headers in the bottom half, 29300, 29301 and 29302; this means that they were taken after each other, 29300 first and 29302 last.

I can see the order my observations are in from the date they were taken...

So... I can match my first observation taken at 25.51183 with the 29300 OBS ID Header.

25.51281 with 29301 and 25.51369 with 29302.

This may seem overly complicated at the moment, but after a few times of doing it, it becomes easier.

So type the relevant **OBS ID** numbers into the boxes provided next to each observation, then click the **Submit** button.

If you are a Regular User, you will get confirmation that your observations have been submitted to the portal for checking by the FT Team. The FT Team can then forward your asteroid positions to the MPC if they are accurate.

When you have successfully submitted three different sets of accurate asteroids positions, then you can be upgraded to an Expert user.

If you are already an **Expert User** read on...

Submitting to the MPC

After the steps above of matching your observations and FITS Headers, you will come to the following page after pressing the submit button:

Asteroid submission

Observation summary

Your observations

```

COD F65
CON D. Bowdley, FT Project, School of Physics and Astronomy, Cardiff University, Cardiff, UK. [david.bowdley
OBS D. Duggan
MEA D. Duggan
TEL 2.0-m Ritchey-Chretien + CCD
ACK MPCReport file updated 2007.06.05 15:54:21
AC2 david.bowdley@astro.cf.ac.uk
NET USNO-B1.0
K06UL6N C2007 01 25.51183 07 15 41.90 +50 47 51.7          18.3 R      F65
K06UL6N C2007 01 25.51281 07 15 42.07 +50 47 52.2          18.2 R      F65
K06UL6N C2007 01 25.51369 07 15 42.21 +50 47 52.6          18.1 R      F65
----- end -----

```

Email to MPC

You can check this data over but should be the same as the MPC Report you submitted. So when you are happy with the results, click on the button to below to email the results to the MPC.

Retrieving FITS Files

One of the major strengths of this portal is that you can retrieve the FITS files for all the observations submitted even though you didn't upload any.

This is the purpose of the matching process above.

So, if you want to download the FITS files for any observations, this is how to go about it.

Click on the Asteroid Observations link on the left hand menu and you will come to this page:

Summary of details for latest asteroids

Search for asteroid observations by name:

To request the FITS files for any observations, check the box next to the observation and click submit (the request may take a few seconds to complete)

Asteroid details						
Object Name	Obs Date	Observatory	Observer	Mag	Filter	Retrieve FITS
K06UL6N	C2007:01:25.513	F65	D. Duggan	18.1	R	<input type="checkbox"/>
K06UL6N	C2007:01:25.512	F65	D. Duggan	18.2	R	<input type="checkbox"/>
K06UL6N	C2007:01:25.511	F65	D. Duggan	18.3	R	<input type="checkbox"/>
K06V13Y	C2007:05:24.473	F65	J Hawkins	19.6	R	<input type="checkbox"/>
K06V13Y	C2007:05:24.473	F65	J Hawkins	19.3	R	<input type="checkbox"/>
K06V13Y	C2007:05:24.467	F65	J Hawkins	19.3	R	<input type="checkbox"/>
K06W01H	C2007:05:24.475	F65	T Cutler	18.0	R	<input type="checkbox"/>
K07C19A	C2007:02:20.482	F65	D. Duggan	17.6	R	<input type="checkbox"/>
K07C19A	C2007:02:20.490	F65	D. Duggan	17.4	R	<input type="checkbox"/>
K07C19A	C2007:02:20.496	F65	D. Duggan	17.4	R	<input type="checkbox"/>
K06V13Y	C2007:05:21.515	F65	M. Beer	18.0	R	<input type="checkbox"/>
K06V13Y	C2007:05:21.509	F65	M. Beer	18.2	R	<input type="checkbox"/>
K06V13Y	C2007:05:21.503	F65	M. Beer	18.2	R	<input type="checkbox"/>
FTN007	C2007:05:11.572	F65	F. Lewis	20.4	R	<input type="checkbox"/>
FTN007	C2007:05:11.569	F65	F. Lewis	20.2	R	<input type="checkbox"/>

The list you see first is a list of recent asteroid observations that have been submitted to the portal. As you can see, my observations are at the top of the list that I just submitted.

If you have a particular asteroid in mind that you wish to search for then simply type the name / number of the asteroid into the search box at the top of the page and click Search.

When you have found the observations of the FITS you want, simply tick the Retrieve FITS boxes next to those observations. Then click Submit at the bottom of the page.

You will then be directed to a page that looks like this:

FITS file download

To download the fits files right click on the link(s) and choose "Save link as" or "Save linked file as"

http://150.204.240.8/data/webfiles/1181382003/h_e_20070124_54_1_1_1.fits

http://150.204.240.8/data/webfiles/1181405780/h_e_20070124_53_1_1_1.fits

http://150.204.240.8/data/webfiles/1181119271/h_e_20070124_52_1_1_1.fits

Simply click on each link to download the FITS files, or right-click and select **Save Target As** and save them to your hard drive.
