Total Solar Eclipse of July 11th, 2010: Data Log and Raw Images

S.Fineschi, G.Massone, G.Capobianco, C.Benna, P.Calcidese, M.Romoli, L.Casetti, L.Abbo, A.Bemporad

Rapporto nr. 144 31/12/2010

Summary

Introduction

The purpose of this document is the presentation of the data acquired during the total solar eclipse of the 2010 July 11th at Tatakoto atoll (French Polynesia) and to resume the calibration data acquired before and after the eclipse. Some data acquired by different satellites are also reported. The instruments used for the on-ground data acquisition are four: CorMag, E-KPol, VLC-1 and VLC-2. The instruments are not described here. The geographic coordinates of the observation place are:

Latitude: 17° 20' 39.3" S

Longitude: 138° 27' 3.1" W

The duration of the totality was 4' 35". The local circumstances are listed below [ESP]:

First Contact : 17h 27' 13.0" UT

Second Contact: 18h 45' 37.7" UT

Third Contact: 18h 50' 12.4" UT

Fourth Contact: 20h 19' 26.6" UT

Maximum Eclipse: 18h 47' 54.6" UT

Altitude of the Sun @ Maximum Eclipse: 36°

Azimuth of the Sun @ Maximum Eclipse: 45°

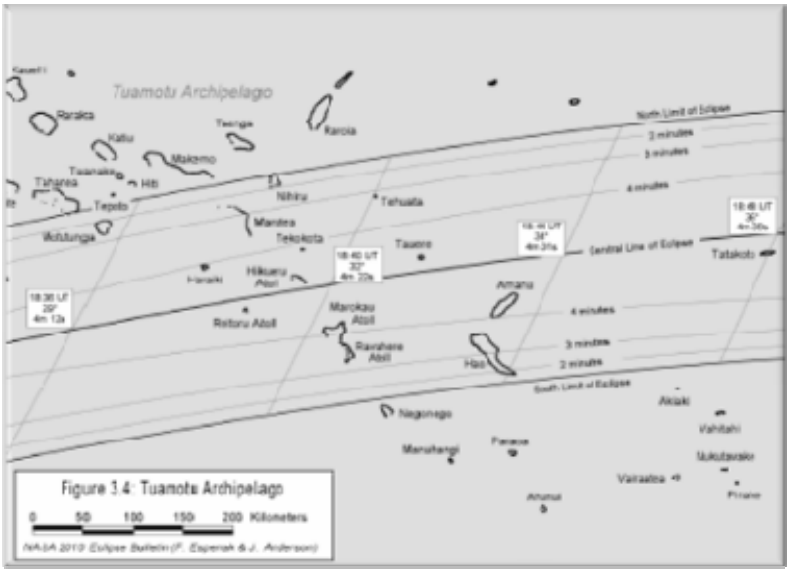


Figure 1 The map of the eclipse path over the Tuamotu archipelago

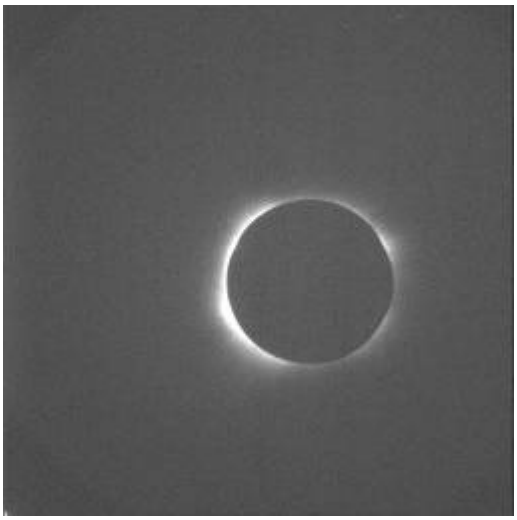
CorMag Data

Data description and data structure

The data acquired with the CorMag are digital images saved in fits format. The frame size is 1024x1024 pixels with a depth of 16 bit. Each file have a size of 2.051 KB (2 MB). The keywords written in the header of the fits files are the follows:

```
SIMPLE  =  T/Conform to FITS Standard (Mandatory)
BITPIX  = 16/Number of bits per pixel (Mandatory)
NAXIS   = 2/Number of axes in the image (Mandatory)
NAXIS1  = 1024/Length of the first axis (columns) (Mandatory)
NAXIS2  =  1024/Length of the second axis (rows) (Mandatory)
EXTEND  =  T/
FILENAME='CorMagImage_2010.07.'/Name of the fits file
INSTRUM = CorMag/Instrument name
TELESC  ='Focal:800;Aperture:60/Telescope parameters in mm
DETECTOR=ProLine PL1001 FWRev:2/Detector description
HPIXSIZE=  24/Horiz Pixel Size in micron
VPIXSIZE= 24/Vert Pixel Size in micron
CCDTEMP = -37/Temperature of the ccd in C
OBSEQ   =  1/Sequential number of data acquisition
EXPTIME = 8000,00/Exposure time in milliseconds
LCTFWAVE=  5303,00/LCTF Wavelength [A]
LCTFTEMP=24,41/LCTF Temperature in °C
LCTFROT =  0,00/LCTF Rotation in deg
DATETIME= '2010/07/11 18:45:41'/Date/Time of file generation (UT)
XBINNING=  1/Binning along X axis
YBINNING=  1/Binning along Y axis
PREPOL  =  'None'/Position of prepolarizer
OPAL    = 'None'/Opal type
END
```

Eclipse Data



Filename: CorMagImage_2010.07.11.18.45.41.fits

Time : 18.45.41 UT

Exposure Time: 8000 ms

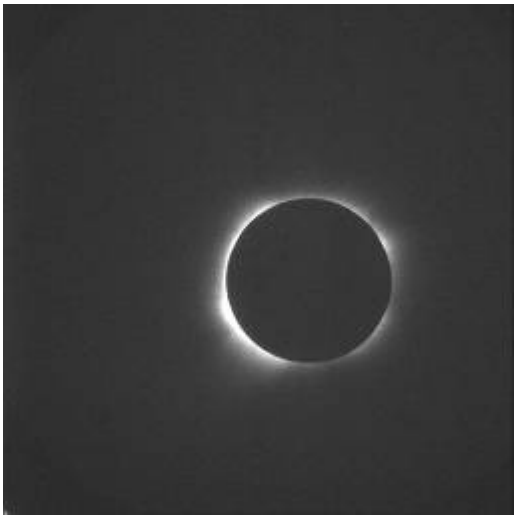
Wavelength: 5303.0 Å

Temperature LCTF: 24.41 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.57.20.fits



Filename: CorMagImage_2010.07.11.18.45.50.fits

Time: 18.45.50 UT

Exposure Time: 8000 ms

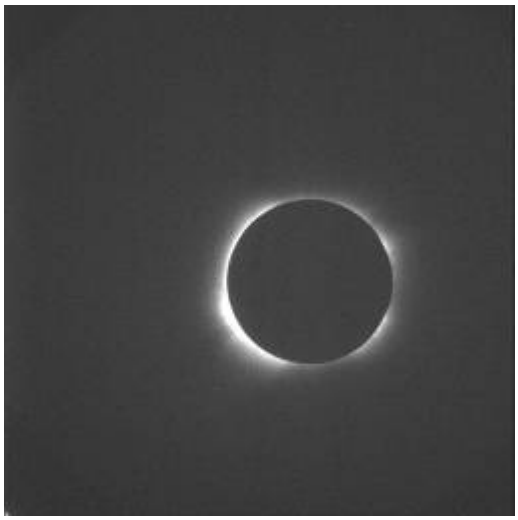
Wavelength: 5301.0 Å

Temperature LCTF: 24.41 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.57.29.fits



Filename: CorMagImage_2010.07.11.18.46.00.fits

Time: 18.46.00 UT

Exposure Time: 8000 ms

Wavelength: 5301.4 Å

Temperature LCTF: 24.41 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.57.39.fits

Filename: CorMagImage_2010.07.11.18.46.09.fits

Time: 18.46.09 UT

Exposure Time: 8000 ms

Wavelength: 5301.8 Å

Temperature LCTF: 24.41 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.57.48.fits

Filename: CorMagImage_2010.07.11.18.46.19.fits

Time: 18.46.19 UT

Exposure Time: 8000 ms

Wavelength: 5302.2 Å

Temperature LCTF: 24.41 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.57.58.fits

Filename: CorMagImage_2010.07.11.18.46.28.fits

Time: 18.46.28 UT

Exposure Time: 8000 ms

Wavelength: 5302.6 Å

Temperature LCTF: 24.41 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.58.07.fits

Filename: CorMagImage_2010.07.11.18.46.38.fits

Time: 18.46.38 UT

Exposure Time: 8000 ms

Wavelength: 5303.0 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.58.16.fits

Filename: CorMagImage_2010.07.11.18.46.47.fits

Time: 18.46.47 UT

Exposure Time: 8000 ms

Wavelength: 5303.4 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.58.26.fits

Filename: CorMagImage_2010.07.11.18.46.56.fits

Time: 18.46.56 UT

Exposure Time: 8000 ms

Wavelength: 5303.8 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.58.35.fits

Filename: CorMagImage_2010.07.11.18.47.06.fits

Time: 18.47.06 UT

Exposure Time: 8000 ms

Wavelength: 5304.2 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.58.45.fits

Filename: CorMagImage_2010.07.11.18.47.15.fits

Time: 18.47.15 UT

Exposure Time: 8000 ms

Wavelength: 5304.6 Å

Temperature LCTF: 24.41 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.58.54.fits

Filename: CorMagImage_2010.07.11.18.47.25.fits

Time: 18.47.25 UT

Exposure Time: 8000 ms

Wavelength: 5305.0 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.59.04.fits

Filename: CorMagImage_2010.07.11.18.47.34.fits

Time: 18.47.34 UT

Exposure Time: 8000 ms

Wavelength: 5305.4 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.59.13.fits

Filename: CorMagImage_2010.07.11.18.47.44.fits

Time: 18.47.44 UT

Exposure Time: 8000 ms

Wavelength: 5305.8 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.59.22.fits

Filename: CorMagImage_2010.07.11.18.47.53.fits

Time: 18.47.53 UT

Exposure Time: 8000 ms

Wavelength: 5306.2 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.59.32.fits

Filename: CorMagImage_2010.07.11.18.48.03.fits

Time: 18.48.03 UT

Exposure Time: 8000 ms

Wavelength: 5308.0 Å

Temperature LCTF: 24.40 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.59.41.fits

Filename: CorMagImage_2010.07.11.18.48.12.fits

Time: 18.48.12 UT

Exposure Time: 8000 ms

Wavelength: 5308.0 Å

Temperature LCTF: 24.40 C

Rotation: 60 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.18.59.51.fits

Filename: CorMagImage_2010.07.11.18.48.21.fits

Time: 18.48.21 UT

Exposure Time: 8000 ms

Wavelength: 5308.0 Å

Temperature LCTF: 24.40 C

Rotation: 120 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.00.00.fits

Filename: CorMagImage_2010.07.11.18.48.31.fits

Time: 18.48.31 UT

Exposure Time: 8000 ms

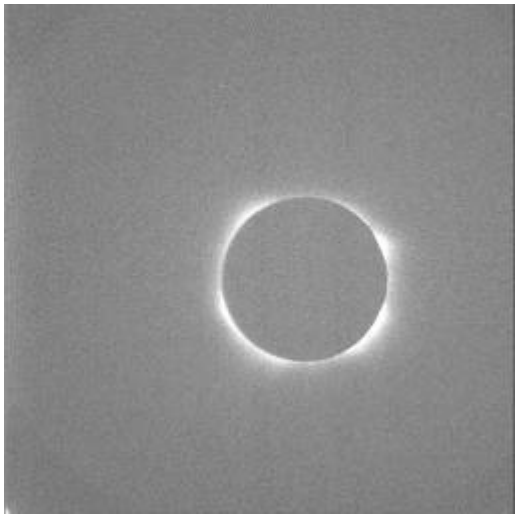
Wavelength: 5303.0 Å

Temperature LCTF: 24.40 C

Rotation: 120 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.00.10.fits



Filename: CorMagImage_2010.07.11.18.48.40.fits

Time: 18.48.40 UT

Exposure Time: 8000 ms

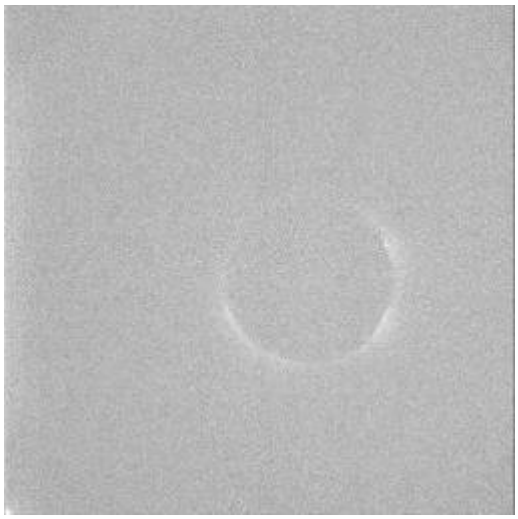
Wavelength: 5303.0 Å

Temperature LCTF: 24.39 C

Rotation: 60 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.00.19.fits



Filename: CorMagImage_2010.07.11.18.48.50.fits

Time: 18.48.50 UT

Exposure Time: 8000 ms

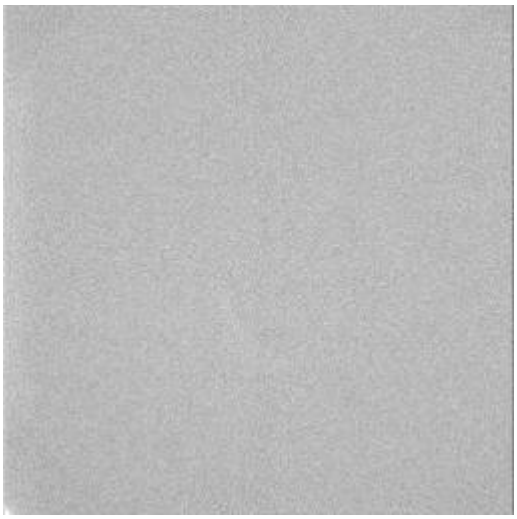
Wavelength: 5303.0 Å

Temperature LCTF: 24.39 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.00.29.fits



Filename: CorMagImage_2010.07.11.18.48.59.fits

Time: 18.48.59 UT

Exposure Time: 8000 ms

Wavelength: 5302.2 Å

Temperature LCTF: 24.39 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.00.38.fits

Filename: CorMagImage_2010.07.11.18.49.09.fits

Time: 18.49.09 UT

Exposure Time: 8000 ms

Wavelength: 5302.2 Å

Temperature LCTF: 24.39 C

Rotation: 60 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.00.48.fits

Filename: CorMagImage_2010.07.11.18.49.18.fits

Time: 18.49.18 UT

Exposure Time: 8000 ms

Wavelength: 5302.2 Å

Temperature LCTF: 24.39 C

Rotation: 120 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.00.57.fits

Filename: CorMagImage_2010.07.11.18.49.27.fits

Time: 18.49.27 UT

Exposure Time: 8000 ms

Wavelength: 5304.2 Å

Temperature LCTF: 24.39 C

Rotation: 120 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.01.07.fits

Filename: CorMagImage_2010.07.11.18.49.37.fits

Time: 18.49.37 UT

Exposure Time: 8000 ms

Wavelength: 5304.2 Å

Temperature LCTF: 24.39 C

Rotation: 60 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.01.16.fits

Filename: CorMagImage_2010.07.11.18.49.46.fits

Time: 18.49.46 UT

Exposure Time: 8000 ms

Wavelength: 5304.2 Å

Temperature LCTF: 24.38 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.01.25.fits

Filename: CorMagImage_2010.07.11.18.49.56.fits

Time: 18.49.56 UT

Exposure Time: 8000 ms

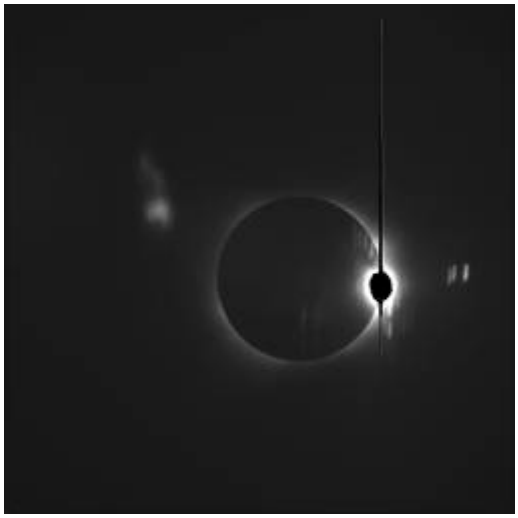
Wavelength: 5308.0 Å

Temperature LCTF: 24.38 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.01.35.fits



Filename: CorMagImage_2010.07.11.18.50.05.fits

Time: 18.50.05 UT

Exposure Time: 8000 ms

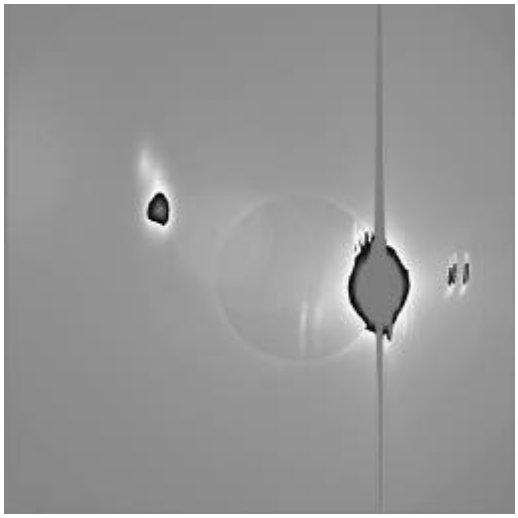
Wavelength: 5303.0 Å

Temperature LCTF: 24.38 C

Rotation: 0 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.01.44.fits



Filename: CorMagImage_2010.07.11.18.50.15.fits

Time: 18.50.15 UT

Exposure Time: 8000 ms

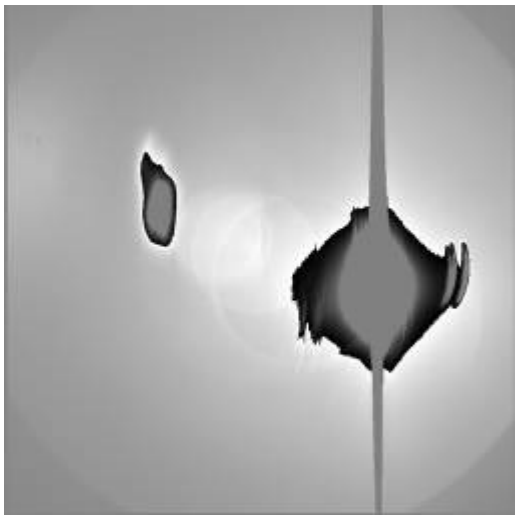
Wavelength: 5303.0 Å

Temperature LCTF: 24.38 C

Rotation: 60 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.01.54.fits



Filename: CorMagImage_2010.07.11.18.50.24.fits

Time: 18.50.24 UT

Exposure Time: 8000 ms

Wavelength: 5303.0 Å

Temperature LCTF: 24.38 C

Rotation: 120 deg

CCD Temperature: -37 C

Dark: CorMagImage_2010.07.11.19.02.03.fits

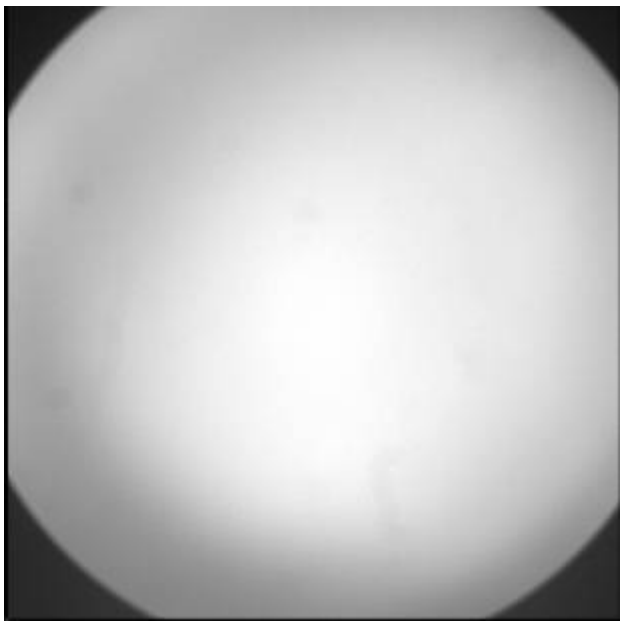
The number of frames is 31. The last 3 frames are not useful for the data analysis. The correspondent dark frame is listed for each data image.

Calibration Data

The data reported here are referred to the post calibration. Calibration data were acquired the day after the eclipse, due to the bad weather of the day of the eclipse.

Radiometric Calibration Data[Absolute Calibration]

The data for the radiometric calibration were acquired mounting the opal 5B in front of the telescope. The frames acquired are listed in Table 1. An example of radiometric frame is the follow:



Filename	Exposure Time [ms]	LCTF WL [A]	LCTF Rot [deg]	LCTF Temp[C]	CCD Temp [C]	Opal
CorMagImage_2010.07.12.18.48.40.fits	8000	5303	0	26,43	-35	5B
CorMagImage_2010.07.12.18.48.49.fits	8000	5301	0	26,43	-35	5B
CorMagImage_2010.07.12.18.48.59.fits	8000	5301,4	0	26,43	-35	5B
CorMagImage_2010.07.12.18.49.08.fits	8000	5301,8	0	26,43	-35	5B
CorMagImage_2010.07.12.18.49.18.fits	8000	5302,2	0	26,43	-35	5B
CorMagImage_2010.07.12.18.49.27.fits	8000	5302,6	0	26,43	-35	5B
CorMagImage_2010.07.12.18.49.37.fits	8000	5303	0	26,43	-35	5B
CorMagImage_2010.07.12.18.49.46.fits	8000	5303,4	0	26,44	-35	5B
CorMagImage_2010.07.12.18.49.56.fits	8000	5303,8	0	26,44	-35	5B
CorMagImage_2010.07.12.18.50.05.fits	8000	5304,2	0	26,44	-35	5B
CorMagImage_2010.07.12.18.50.15.fits	8000	5304,6	0	26,43	-35	5B
CorMagImage_2010.07.12.18.50.24.fits	8000	5305	0	26,44	-35	5B
CorMagImage_2010.07.12.18.50.34.fits	8000	5305,4	0	26,44	-35	5B
CorMagImage_2010.07.12.18.50.43.fits	8000	5305,8	0	26,44	-35	5B
CorMagImage_2010.07.12.18.50.53.fits	8000	5306,2	0	26,44	-35	5B
CorMagImage_2010.07.12.18.51.02.fits	8000	5308	0	26,44	-35	5B
CorMagImage_2010.07.12.18.51.12.fits	8000	5308	60	26,45	-35	5B
CorMagImage_2010.07.12.18.51.21.fits	8000	5308	120	26,45	-35	5B
CorMagImage_2010.07.12.18.51.31.fits	8000	5303	120	26,45	-35	5B
CorMagImage_2010.07.12.18.51.40.fits	8000	5303	60	26,45	-35	5B
CorMagImage_2010.07.12.18.51.50.fits	8000	5303	0	26,45	-35	5B
CorMagImage_2010.07.12.18.51.59.fits	8000	5302,2	0	26,45	-35	5B
CorMagImage_2010.07.12.18.52.09.fits	8000	5302,2	60	26,45	-35	5B
CorMagImage_2010.07.12.18.52.18.fits	8000	5302,2	120	26,45	-35	5B
CorMagImage_2010.07.12.18.52.28.fits	8000	5304,2	120	26,45	-35	5B
CorMagImage_2010.07.12.18.52.37.fits	8000	5304,2	60	26,45	-35	5B
CorMagImage_2010.07.12.18.52.47.fits	8000	5304,2	0	26,45	-35	5B
CorMagImage_2010.07.12.18.52.56.fits	8000	5308	0	26,46	-35	5B
CorMagImage_2010.07.12.18.53.05.fits	8000	5303	0	26,46	-35	5B
CorMagImage_2010.07.12.18.53.15.fits	8000	5303	60	26,46	-35	5B
CorMagImage_2010.07.12.18.53.25.fits	8000	5303	120	26,46	-35	5B

Table 1 – List of the data for the Radiometric Calibration

For the opal glass attenuator/diffuser 5B, used for this calibration, the attenuation coefficient at 530nm is 7.85E-7.

Polarimetric Calibration Data

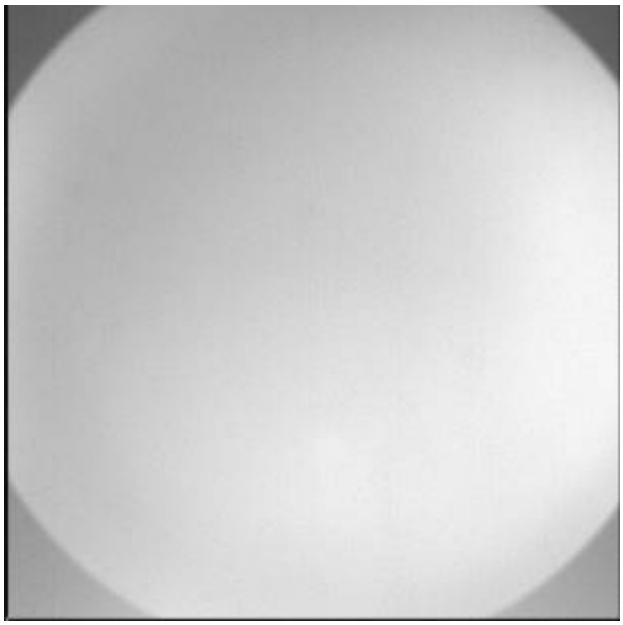
The polarimetric data were acquired mounting a prepolarizer and the opal in front of the telescope. Data are listed in Table 2.

Filename	ExpTime [ms]	LCTF WL [A]	LCTF Rot [deg]	LCTF Temp[C]	CCD Temp [C]	Opal	Prepol [deg]
CorMagImage_2010.07.12.19.54.26.fits	8000	5303	0	26,81	-36	5B	0
CorMagImage_2010.07.12.19.54.35.fits	8000	5303	60	26,81	-36	5B	0
CorMagImage_2010.07.12.19.54.45.fits	8000	5303	120	26,81	-36	5B	0
CorMagImage_2010.07.12.19.54.54.fits	8000	5308	0	26,81	-36	5B	0

CorMagImage_2010.07.12.19.55.04.fits	8000	5308	60	26,81	-36	5B	0
CorMagImage_2010.07.12.19.55.13.fits	8000	5308	120	26,81	-36	5B	0
CorMagImage_2010.07.12.19.55.23.fits	8000	5302,2	0	26,81	-36	5B	0
CorMagImage_2010.07.12.19.55.32.fits	8000	5302,2	60	26,8	-36	5B	0
CorMagImage_2010.07.12.19.55.42.fits	8000	5302,2	120	26,8	-36	5B	0
CorMagImage_2010.07.12.19.55.51.fits	8000	5304,2	0	26,8	-36	5B	0
CorMagImage_2010.07.12.19.56.01.fits	8000	5304,2	60	26,8	-36	5B	0
CorMagImage_2010.07.12.19.56.10.fits	8000	5304,2	120	26,8	-36	5B	0
CorMagImage_2010.07.12.20.00.46.fits	8000	5303	0	26,8	-36	5B	45
CorMagImage_2010.07.12.20.00.55.fits	8000	5303	60	26,79	-35	5B	45
CorMagImage_2010.07.12.20.01.05.fits	8000	5303	120	26,79	-35	5B	45
CorMagImage_2010.07.12.20.01.14.fits	8000	5308	0	26,79	-35	5B	45
CorMagImage_2010.07.12.20.01.24.fits	8000	5308	60	26,78	-35	5B	45
CorMagImage_2010.07.12.20.01.33.fits	8000	5308	120	26,78	-35	5B	45
CorMagImage_2010.07.12.20.01.43.fits	8000	5302,2	0	26,78	-35	5B	45
CorMagImage_2010.07.12.20.01.52.fits	8000	5302,2	60	26,78	-35	5B	45
CorMagImage_2010.07.12.20.02.02.fits	8000	5302,2	120	26,78	-35	5B	45
CorMagImage_2010.07.12.20.02.11.fits	8000	5304,2	0	26,77	-35	5B	45
CorMagImage_2010.07.12.20.02.21.fits	8000	5304,2	60	26,77	-35	5B	45
CorMagImage_2010.07.12.20.02.30.fits	8000	5304,2	120	26,77	-35	5B	45
CorMagImage_2010.07.12.20.08.15.fits	8000	5303	0	26,74	-35	5B	60
CorMagImage_2010.07.12.20.08.25.fits	8000	5303	60	26,74	-35	5B	60
CorMagImage_2010.07.12.20.08.35.fits	8000	5303	120	26,74	-35	5B	60
CorMagImage_2010.07.12.20.08.44.fits	8000	5308	0	26,74	-35	5B	60
CorMagImage_2010.07.12.20.08.54.fits	8000	5308	60	26,74	-35	5B	60
CorMagImage_2010.07.12.20.09.03.fits	8000	5308	120	26,74	-35	5B	60
CorMagImage_2010.07.12.20.09.12.fits	8000	5302,2	0	26,74	-35	5B	60
CorMagImage_2010.07.12.20.09.22.fits	8000	5302,2	60	26,73	-35	5B	60
CorMagImage_2010.07.12.20.09.31.fits	8000	5302,2	120	26,74	-35	5B	60
CorMagImage_2010.07.12.20.09.41.fits	8000	5304,2	0	26,73	-35	5B	60
CorMagImage_2010.07.12.20.09.50.fits	8000	5304,2	60	26,74	-35	5B	60
CorMagImage_2010.07.12.20.10.00.fits	8000	5304,2	120	26,74	-35	5B	60
CorMagImage_2010.07.12.20.11.43.fits	8000	5303	0	26,75	-35	5B	120
CorMagImage_2010.07.12.20.11.53.fits	8000	5303	60	26,75	-35	5B	120
CorMagImage_2010.07.12.20.12.02.fits	8000	5303	120	26,75	-35	5B	120
CorMagImage_2010.07.12.20.12.12.fits	8000	5308	0	26,75	-35	5B	120
CorMagImage_2010.07.12.20.12.21.fits	8000	5308	60	26,75	-35	5B	120
CorMagImage_2010.07.12.20.12.31.fits	8000	5308	120	26,75	-35	5B	120
CorMagImage_2010.07.12.20.12.40.fits	8000	5302,2	0	26,75	-35	5B	120
CorMagImage_2010.07.12.20.12.50.fits	8000	5302,2	60	26,75	-35	5B	120
CorMagImage_2010.07.12.20.12.59.fits	8000	5302,2	120	26,75	-35	5B	120
CorMagImage_2010.07.12.20.13.09.fits	8000	5304,2	0	26,75	-35	5B	120
CorMagImage_2010.07.12.20.13.18.fits	8000	5304,2	60	26,75	-35	5B	120
CorMagImage_2010.07.12.20.13.28.fits	8000	5304,2	120	26,75	-35	5B	120

Table 2 - List of the data for the Polarimetric Calibration

An example of this frame is the follow one:

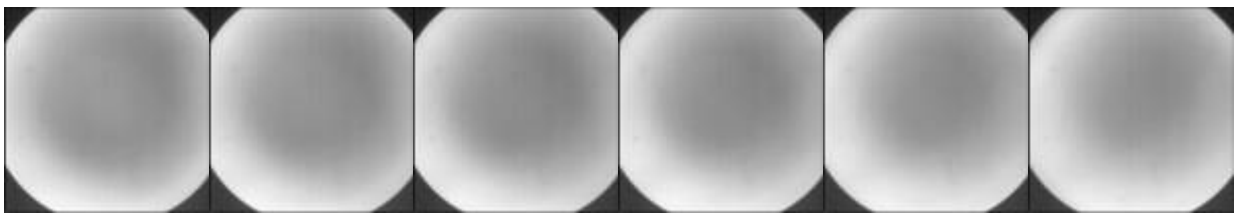


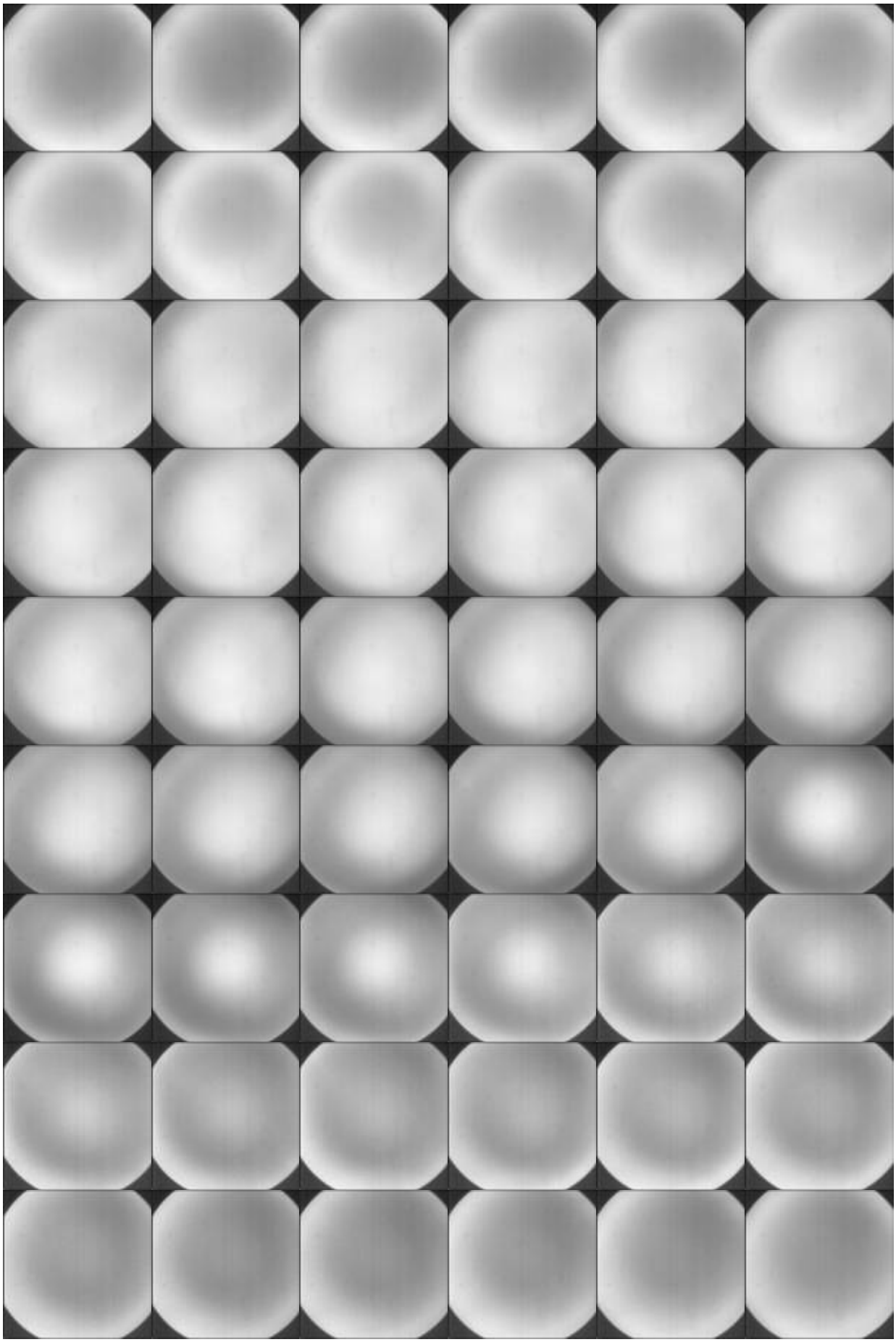
Wavelength Scan

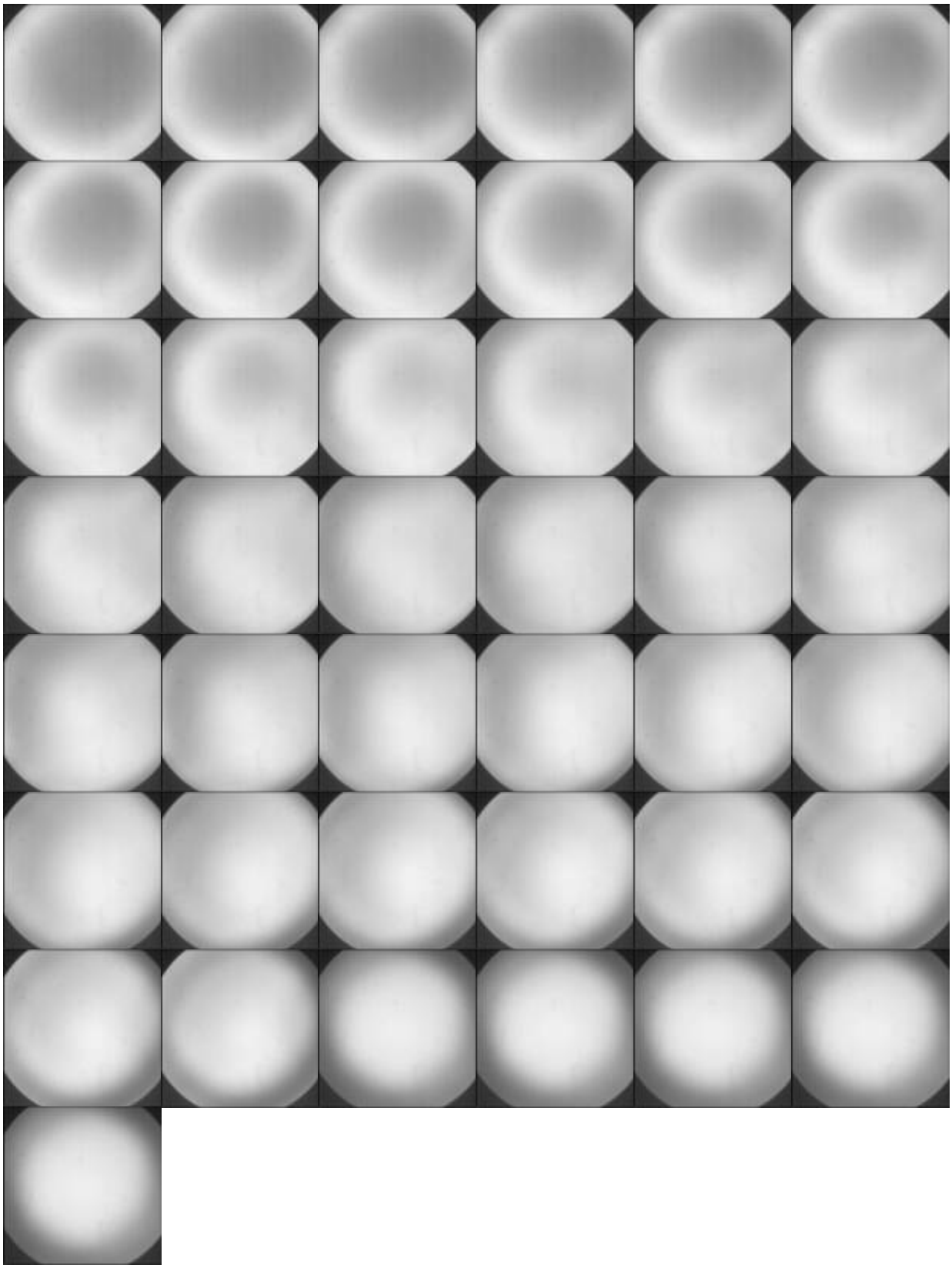
This scan was run with the 5B opal mounted in front o the telescope. The range of wavelength of the LCTF has been selected from 5287 Å to 5338 Å, using steps of 0.5 Å. The number of frames acquired is equal to 103. A simple sequence is reported here. The parameters are:

- Exposition Time = 1000 ms;
- CCD Temperature = -35°C;
- LCTF Temperature = 26.5 °C;
- LCTF Rotation = 0 deg;
- Opal type = 5B

The sequence of frames is the follow:







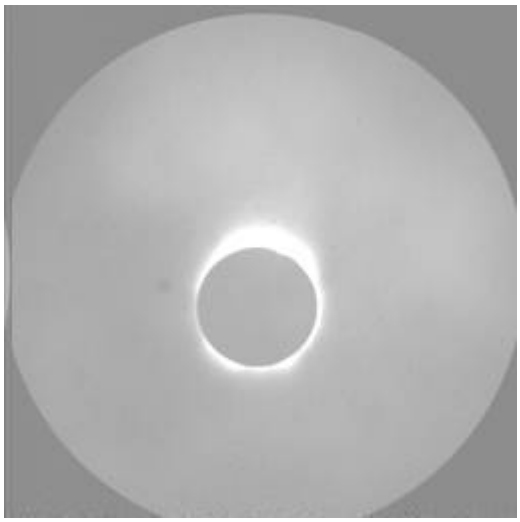
E-Kpol Data

Data description and data structure

The data acquired with the E-KPol are digital images saved in fits format. The frame size is 1024x1024 pixels with a depth of 16 bit. Each file have a size of 4.099 KB (4 MB). The keywords written in the header of the fits files are the follows:

```
SIMPLE  =                    T/Conform to FITS Standard  (Mandatory)
BITPIX  =                  -32/Number of bits per pixel  (Mandatory)
NAXIS   =                    2/Number of axes in the image  (Mandatory)
NAXIS1  =               1024/Length of the first axis (columns)  (Mandatory)
NAXIS2  =                 1024/Length of the second axis (rows) (Mandatory)
FILENAME='1Image20100711184545'/Name of the fits file
OBSEQ   =                    1/Sequential number of EKPol data acquisition
EXPTIME =               250,00/Exposure time in milliseconds
LCVOLT  =                 4500/LCVR Voltage in mV
LCTEMP  =                30,74/LCVR Temperature in °C
DATEOBS =          '2010/07/11'/Date of the start of exposure
TIMEOBS =            '18:45:41'/Time of the start of exposure
DATETIME= '2010/07/11 18:45:45'/Date/Time of file generation
XBINNING=                    1/Binning along X axis
YBINNING=                    1/Binning along Y axis
PREPOL  =               'None'/Position of prepolarizer
OPAL    =               'None'/Opal type
DECLIN  =               'None'/declination of  pointing (ddd.mm.ss)
RA      =               'None'/RA of  pointing (ddd.mm.ss)
END
```

Eclipse Data



Filename: 1Image20100711184545.fits

Time: 18.45.45 UT

Exposure Time: 250 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 2Image20100711184549.fits

Time: 18.45.49 UT

Exposure Time: 250 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 3Image20100711184553.fits

Time: 18.45.53 UT

Exposure Time: 250 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 4Image20100711184557.fits

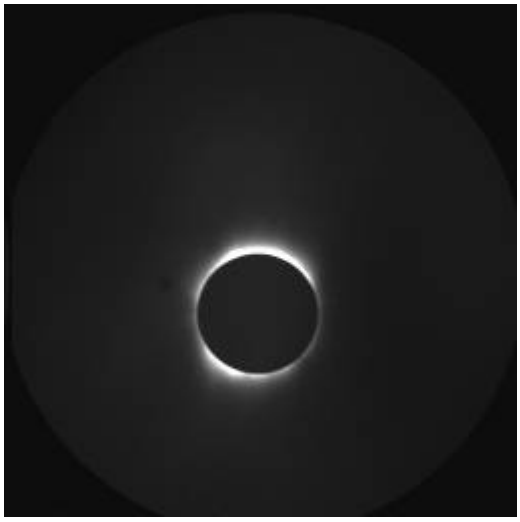
Time: 18.45.57 UT

Exposure Time: 250 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits



Filename: 5Image20100711184603.fits

Time: 18.46.03 UT

Exposure Time: 1000 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 6Image20100711184608.fits

Time: 18.46.08 UT

Exposure Time: 1000 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 7Image20100711184613.fits

Time: 18.46.13 UT

Exposure Time: 1000 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 8Image20100711184618.fits

Time: 18.46.18 UT

Exposure Time: 1000 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename:9Image20100711184624.fits

Time: 18.46.24 UT

Exposure Time: 250 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 10Image20100711184628.fits

Time: 18.46.28 UT

Exposure Time: 250 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 11Image20100711184632.fits

Time: 18.46.32 UT

Exposure Time: 250 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 12Image20100711184636.fits

Time: 18.46.36 UT

Exposure Time: 250 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 13Image20100711184643.fits

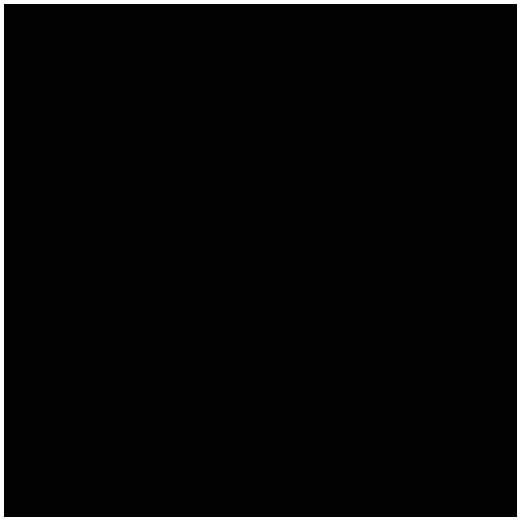
Time: 18.46.43 UT

Exposure Time: 1000 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits



Filename: 14Image20100711184647.fits

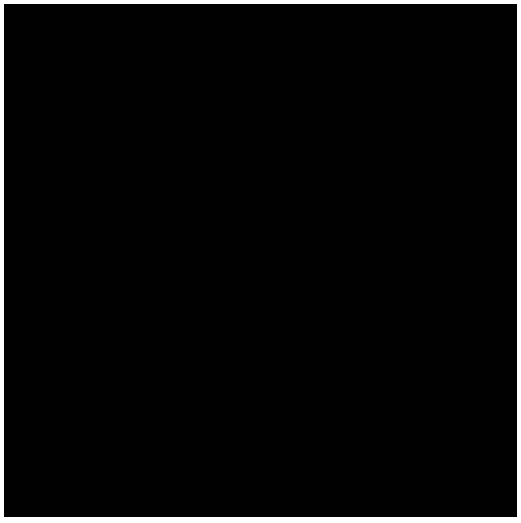
Time: 18.46.47 UT

Exposure Time: 1000 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits



Filename: 15Image20100711184652.fits

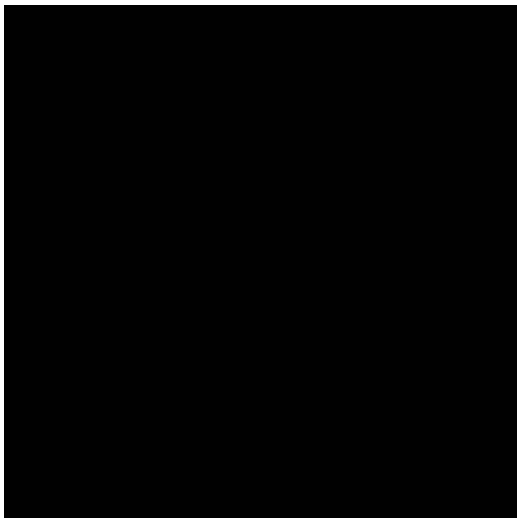
Time: 18.46.52 UT

Exposure Time: 1000 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits



Filename: 16Image20100711184657.fits

Time: 18.46.57 UT

Exposure Time: 1000 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 17Image20100711184703.fits

Time: 18.47.03 UT

Exposure Time: 250 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 18Image20100711184707.fits

Time: 18.47.07 UT

Exposure Time: 250 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 19Image20100711184711.fits

Time: 18.47.11 UT

Exposure Time: 250 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 20Image20100711184715.fits

Time: 18.47.15 UT

Exposure Time: 250 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 21Image20100711184722.fits

Time: 18.47.22 UT

Exposure Time: 1000 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 22Image20100711184727.fits

Time: 18.47.27 UT

Exposure Time: 1000 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 23Image20100711184731.fits

Time: 18.47.31 UT

Exposure Time: 1000 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 24Image20100711184736.fits

Time: 18.47.36 UT

Exposure Time: 1000 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 25Image20100711184742.fits

Time: 18.47.42 UT

Exposure Time: 250 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 26Image20100711184746.fits

Time: 18.47.46 UT

Exposure Time: 250 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 27Image20100711184750.fits

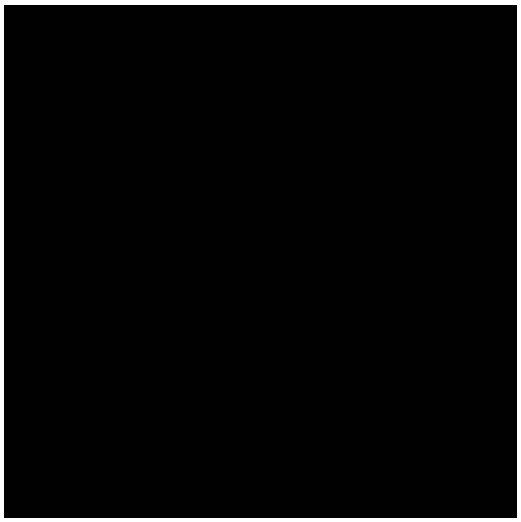
Time: 18.47.50 UT

Exposure Time: 250 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits



Filename: 28Image20100711184754.fits

Time: 18.47.54 UT

Exposure Time: 250 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 29Image20100711184801.fits

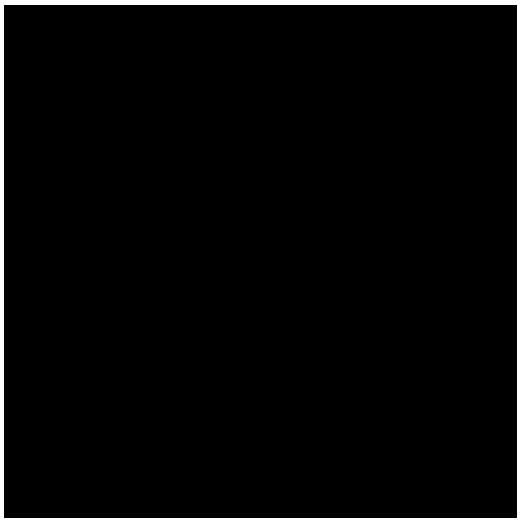
Time: 18.48.01 UT

Exposure Time: 1000 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits



Filename: 30Image20100711184806.fits

Time: 18.48.06 UT

Exposure Time: 1000 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 31Image20100711184811.fits

Time: 18.48.11 UT

Exposure Time: 1000 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 32Image20100711184816.fits

Time: 18.48.16 UT

Exposure Time: 1000 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 33Image20100711184821.fits

Time: 18.48.21 UT

Exposure Time: 250 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 34Image20100711184825.fits

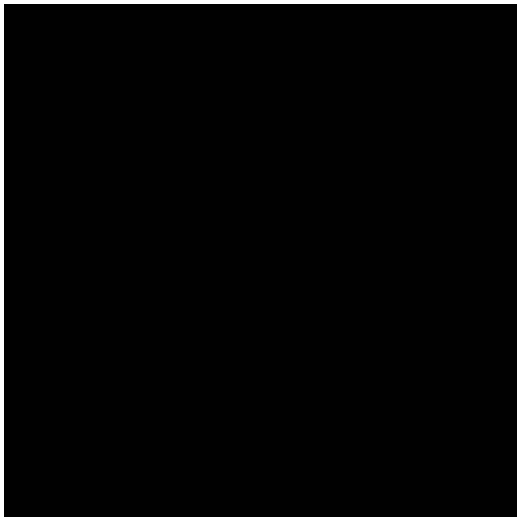
Time: 18.48.25 UT

Exposure Time: 250 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits



Filename: 35Image20100711184830.fits

Time: 18.48.30 UT

Exposure Time: 250 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 36Image20100711184834.fits

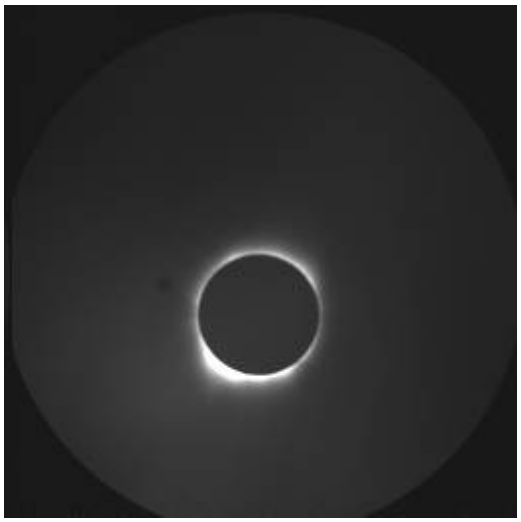
Time: 18.48.34 UT

Exposure Time: 250 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits



Filename: 37Image20100711184840.fits

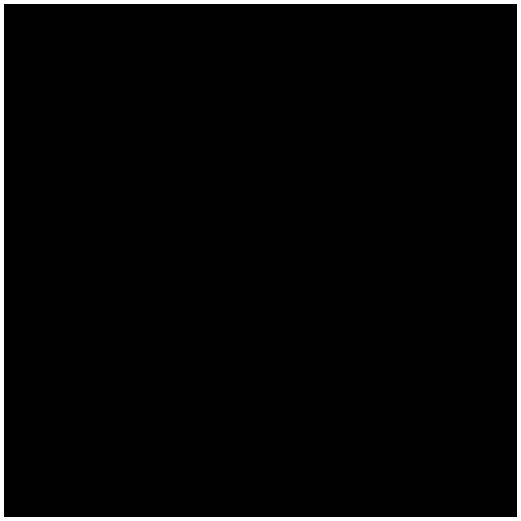
Time: 18.48.40 UT

Exposure Time: 1000 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits



Filename: 38Image20100711184845.fits

Time: 18.48.45 UT

Exposure Time: 1000 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 39Image20100711184850.fits

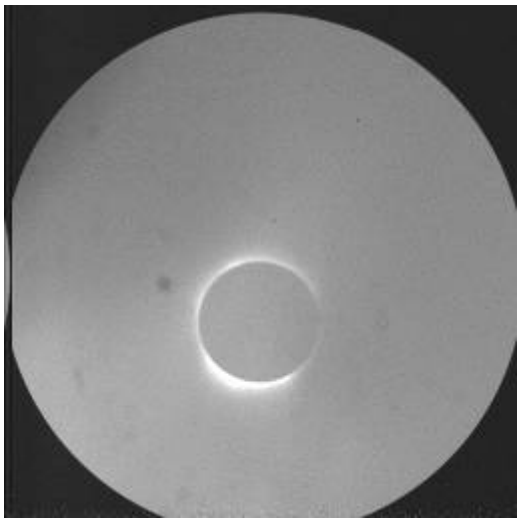
Time: 18.48.50 UT

Exposure Time: 1000 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits



Filename: 40Image20100711184855.fits

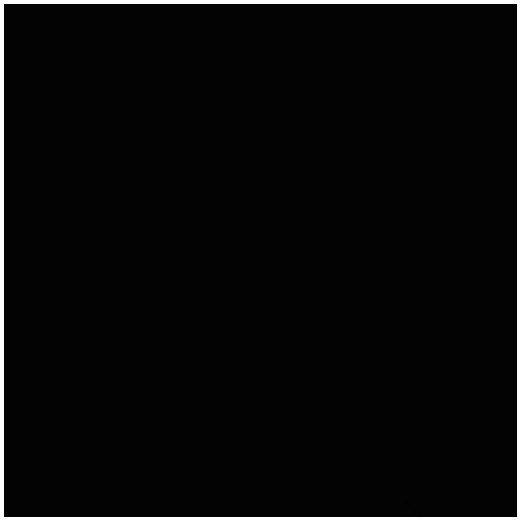
Time: 18.48.55 UT

Exposure Time: 1000 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits



Filename: 41Image20100711184901.fits

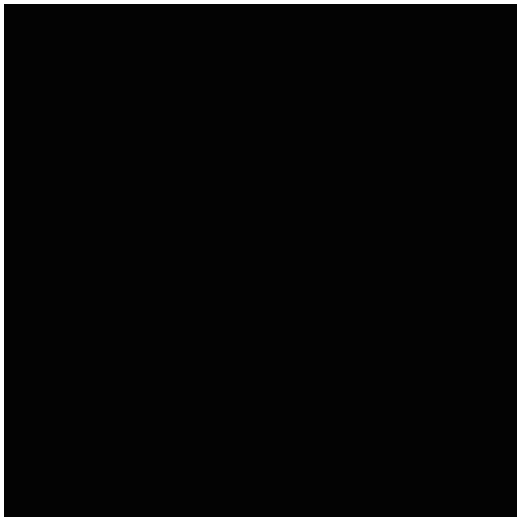
Time: 18.49.01 UT

Exposure Time: 250 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits



Filename: 42Image20100711184905.fits

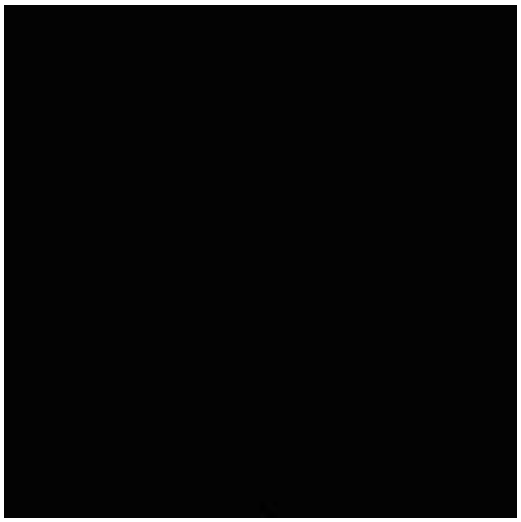
Time: 18.49.05 UT

Exposure Time: 250 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits



Filename: 43Image20100711184909.fits

Time: 18.49.09 UT

Exposure Time: 250 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 44Image20100711184913.fits

Time: 18.49.13 UT

Exposure Time: 250 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 45Image20100711184919.fits

Time: 18.49.19 UT

Exposure Time: 1000 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 46Image20100711184924.fits

Time: 18.49.24 UT

Exposure Time: 1000 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 47Image20100711184929.fits

Time: 18.49.29 UT

Exposure Time: 1000 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 48Image20100711184934.fits

Time: 18.49.34 UT

Exposure Time: 1000 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 49Image20100711184940.fits

Time: 18.49.40 UT

Exposure Time: 250 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 50Image20100711184944.fits

Time: 18.49.44 UT

Exposure Time: 250 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 51Image20100711184948.fits

Time: 18.49.48 UT

Exposure Time: 250 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 52Image20100711184952.fits

Time: 18.49.52 UT

Exposure Time: 250 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225821.fits

Filename: 53Image20100711184959.fits

Time: 18.49.59 UT

Exposure Time: 1000 ms

LCVR Voltage: 4500 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 54Image20100711185003.fits

Time: 18.50.03 UT

Exposure Time: 1000 ms

LCVR Voltage: 5400 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename55Image20100711185008.fits

Time: 18.50.08 UT

Exposure Time: 1000 ms

LCVR Voltage: 7000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

Filename: 56Image20100711185013.fits

Time: 18.50.13 UT

Exposure Time: 1000 ms

LCVR Voltage: 10000 mV

Temperature LCVR: 30.7 C

Dark: DarkImage20100712225747.fits

56 data frames were acquired during the eclipse (7 sequence of 8 frames). The last 3 frames are satured.

Calibration Data

The calibration data were acquired the day after the eclipse due to the bad weather. The opal 5B and a prepolarizer was mounted in front of the telescope.

Radio-polarimetric Calibration Data

The data acquired are listed in Table 3. An example of the frames is the follow:

Filename	ExpTime[ms]	LCVR Volt[mV]	LCVR Temp [C]	Opal	Prepol [deg]
1Image20100712222528.fits	250	4500	30,64	5B	0
2Image20100712222532.fits	250	5400	30,64	5B	0
3Image20100712222536.fits	250	7000	30,64	5B	0
4Image20100712222540.fits	250	10000	30,64	5B	0
5Image20100712222546.fits	1000	4500	30,64	5B	0
6Image20100712222551.fits	1000	5400	30,62	5B	0
7Image20100712222556.fits	1000	7000	30,62	5B	0
8Image20100712222601.fits	1000	10000	30,62	5B	0
1Image20100712225018.fits	250	4500	30,59	5B	45
2Image20100712225022.fits	250	5400	30,59	5B	45
3Image20100712225026.fits	250	7000	30,62	5B	45
4Image20100712225030.fits	250	10000	30,62	5B	45
5Image20100712225036.fits	1000	4500	30,62	5B	45
6Image20100712225041.fits	1000	5400	30,59	5B	45
7Image20100712225046.fits	1000	7000	30,59	5B	45
8Image20100712225051.fits	1000	10000	30,59	5B	45
1Image20100712225846.fits	250	4500	30,62	5B	90
2Image20100712225850.fits	250	5400	30,62	5B	90
3Image20100712225854.fits	250	7000	30,62	5B	90
4Image20100712225858.fits	250	10000	30,62	5B	90
5Image20100712225904.fits	1000	4500	30,59	5B	90
6Image20100712225909.fits	1000	5400	30,62	5B	90
7Image20100712225914.fits	1000	7000	30,62	5B	90
8Image20100712225919.fits	1000	10000	30,62	5B	90
1Image20100712225304.fits	250	4500	30,62	5B	135
2Image20100712225308.fits	250	5400	30,62	5B	135
3Image20100712225312.fits	250	7000	30,62	5B	135
4Image20100712225316.fits	250	10000	30,59	5B	135
5Image20100712225322.fits	1000	4500	30,62	5B	135
6Image20100712225327.fits	1000	5400	30,62	5B	135
7Image20100712225332.fits	1000	7000	30,62	5B	135
8Image20100712225337.fits	1000	10000	30,59	5B	135

Table 3 – E-KPol calibration data

VLC-1 Data

The specifications of the instruments are the follows:

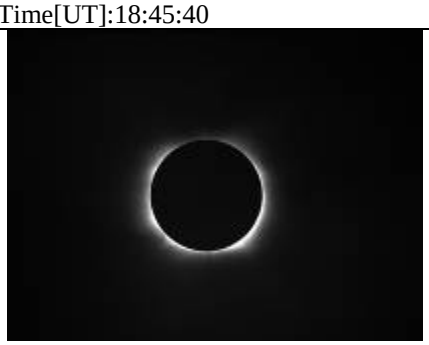
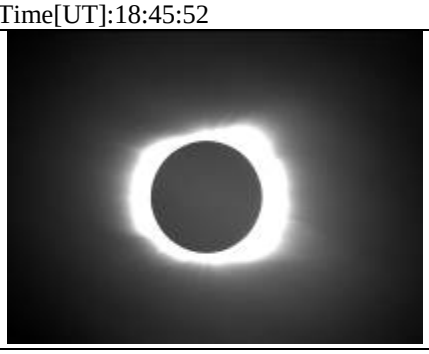
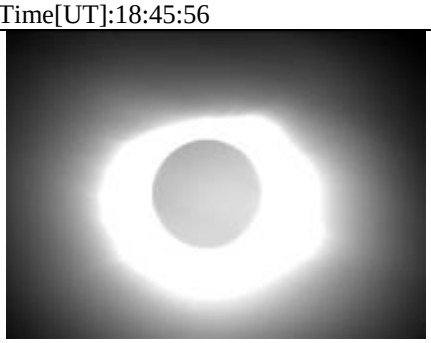
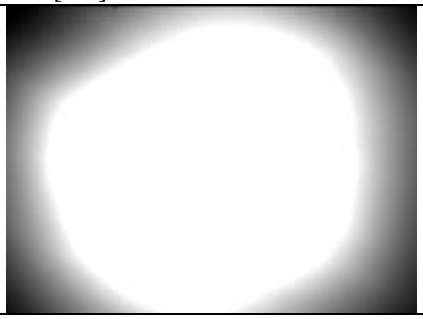
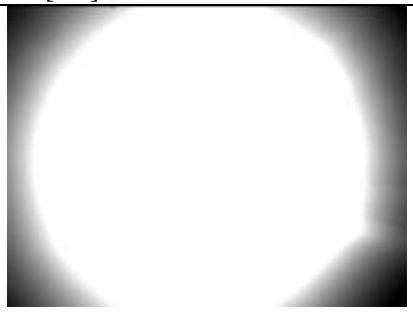
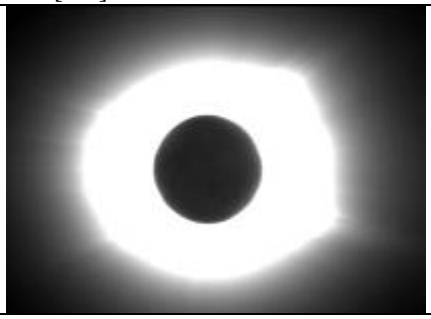
- Optics Borg 76ED 500mm focal length aperture f/6.5 w/ G filter (Baader)
- camera FLI MicroLine 8300 3326x2504 pixel;
- mount Astro-Physics 600E GTO.

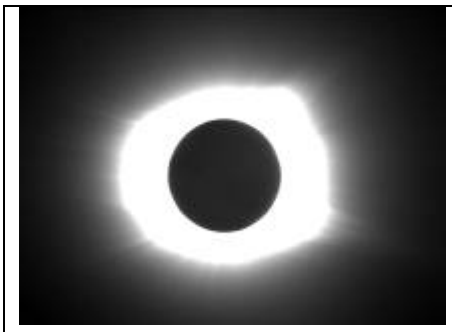
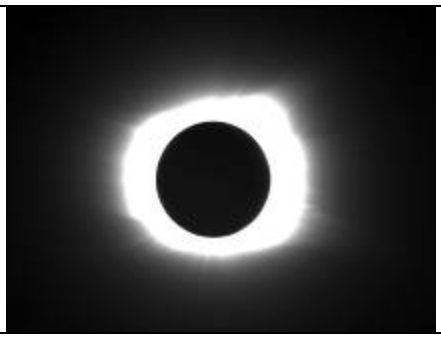
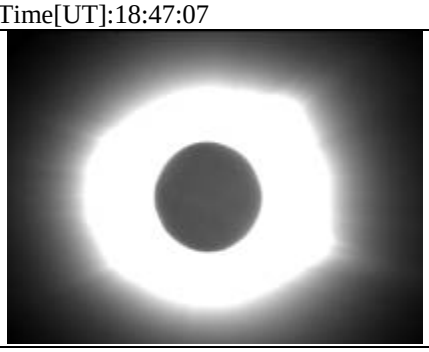
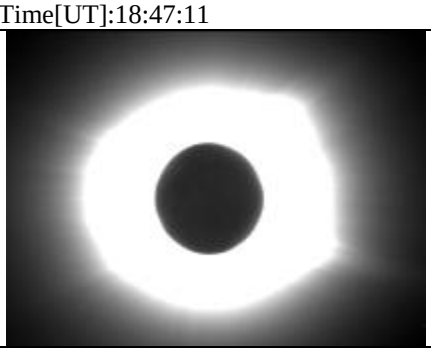
Data description and data structure

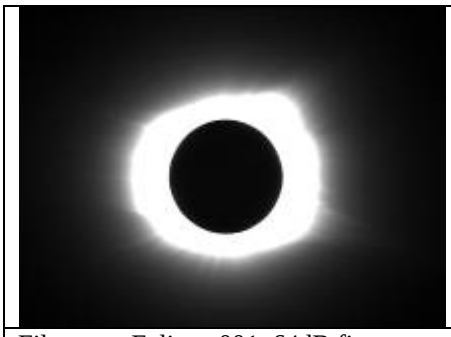
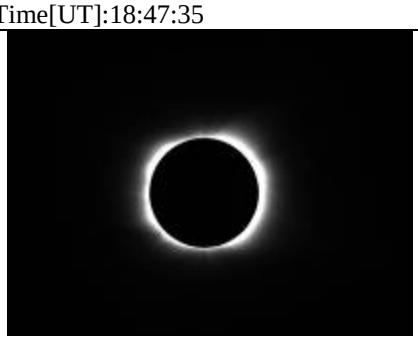
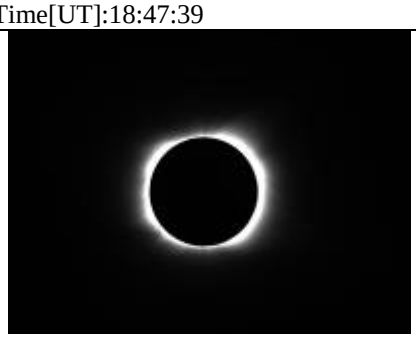
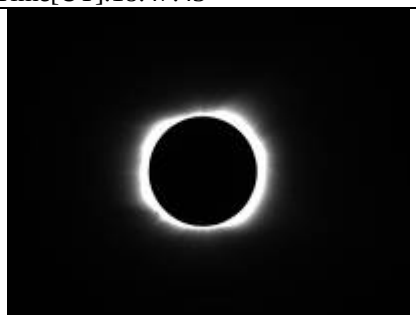
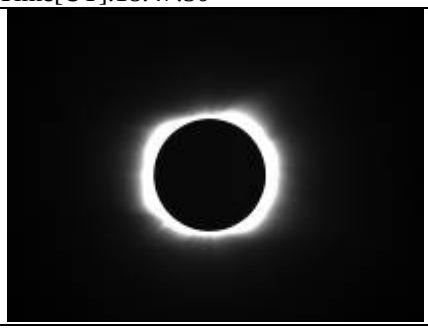
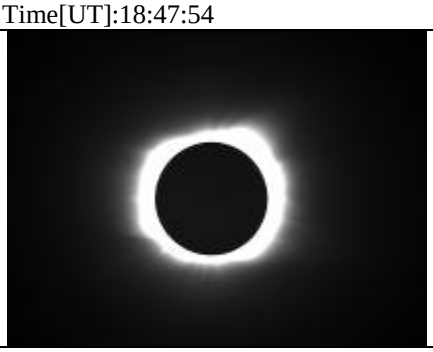
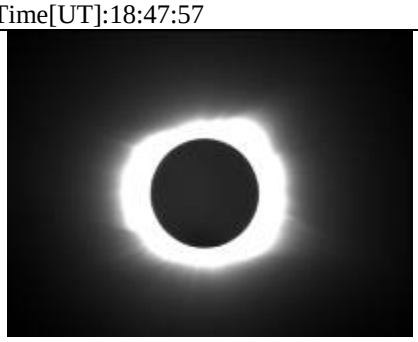
The data acquired with the VLC-1 are digital images saved in fits format. The frame size is 3326x2504 pixels with a depth of 16 bit. Each file have a size of 16.271 KB (16 MB). The keywords written in the header of the fits files are the follows:

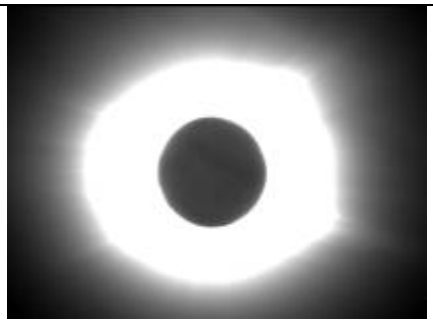
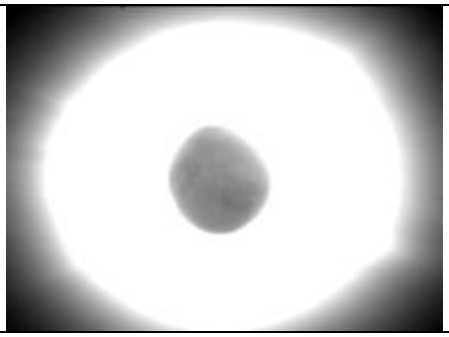
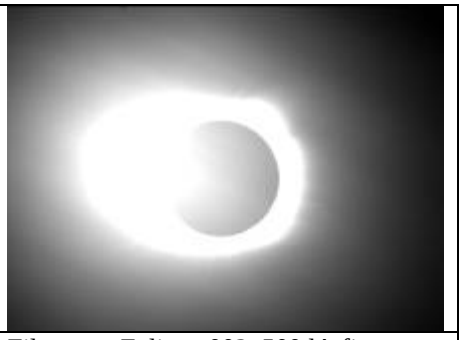
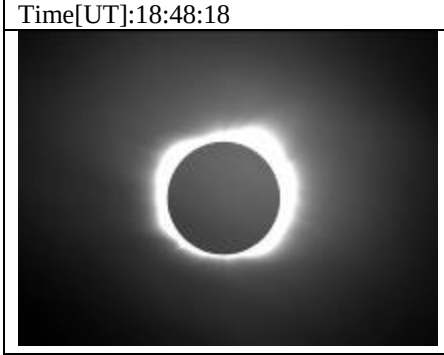
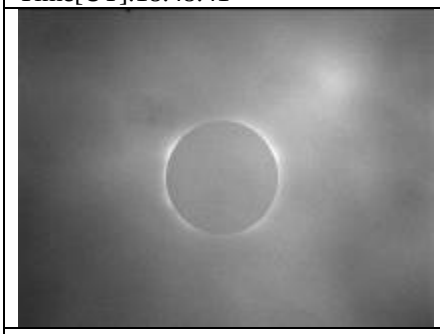
```
SIMPLE  =                    T
BITPIX  =                   16 /8 unsigned int, 16 & 32 int, -32 & -64 real
NAXIS   =                    2 /number of axes
NAXIS1  =                 3326 /fastest changing axis
NAXIS2  =                 2504 /next to fastest changing axis
BSCALE  =   1.0000000000000000 /physical = BZERO + BSCALE*array_value
BZERO   =   32768.000000000000 /physical = BZERO + BSCALE*array_value
DATE-OBS= '2010-07-11T18:45:36' /YYYY-MM-DDThh:mm:ss observation start, UT
EXPTIME =  2.000000000000E-002 /Exposure time in seconds
EXPOSURE=  2.000000000000E-002 /Exposure time in seconds
SET-TEMP=  -30.000000000000000 /CCD temperature setpoint in C
CCD-TEMP=  -30.125000000000000 /CCD temperature at start of exposure in C
XPIXSZ  =   5.4000000000000004 /Pixel Width in microns (after binning)
YPIXSZ  =   5.4000000000000004 /Pixel Height in microns (after binning)
XBINNING=                    1 /Binning factor in width
YBINNING=                    1 /Binning factor in height
XORGSUBF=                    0 /Subframe X position in binned pixels
YORGSUBF=                    0 /Subframe Y position in binned pixels
FILTER  = 'Green   ' /           Filter used when taking image
IMAGETYP= 'Light Frame' /        Type of image
SITELAT = '-17 21 00' /          Latitude of the imaging location
SITELONG= '138 00 00' /          Longitude of the imaging location
FOCALLEN=   500.00000000000000 /Focal length of telescope in mm
APTDIA  =   67.000000000000000 /Aperture diameter of telescope in mm
APTAREA =   3525.6524536013603 /Aperture area of telescope in mm^2
SWCREATE= 'MaxIm DL Version 5.09' /Name of software that created the image
SBSTDVER= 'SBFITSEXT Version 1.0' /Version of SBFITSEXT standard in effect
OBJECT  = '        '
TELESCOP= '        ' /           telescope used to acquire this image
INSTRUME= 'FLI - New'
OBSERVER= '        '
NOTES   = '        '
FLIPSTAT= '        '
SWOWNER = 'Marco Romoli' /       Licensed owner of software
END
```

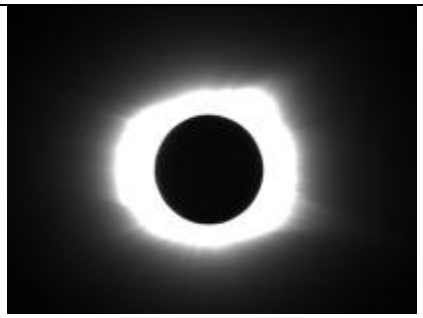
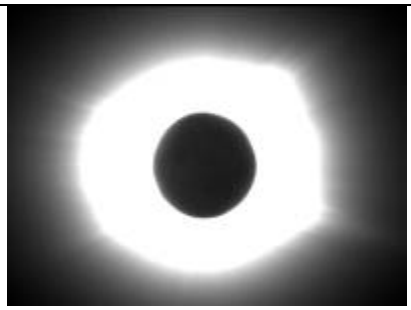
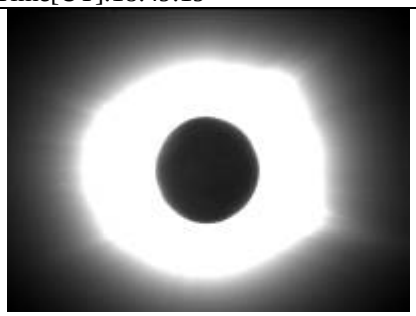
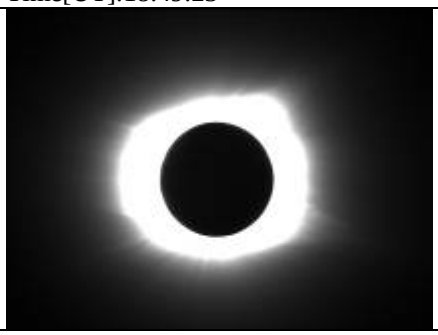
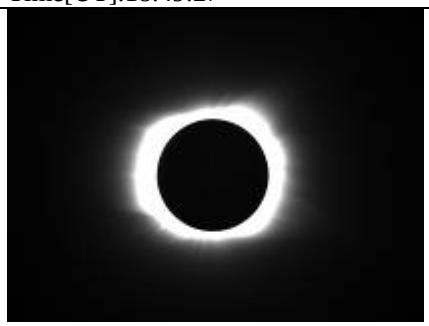
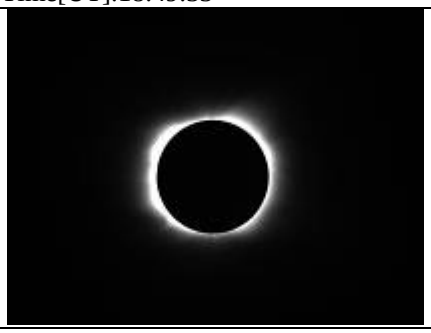
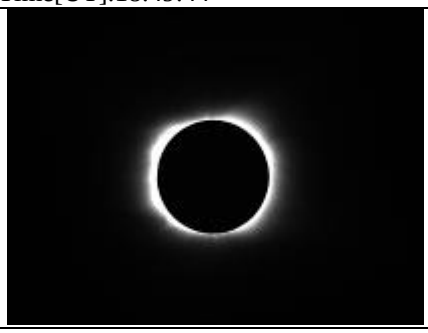
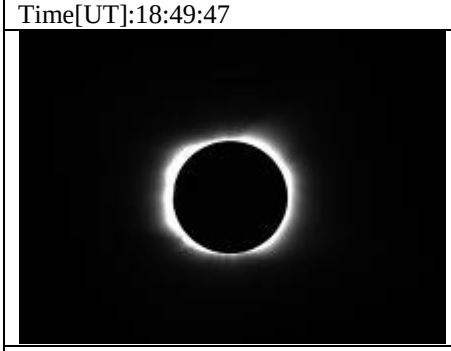
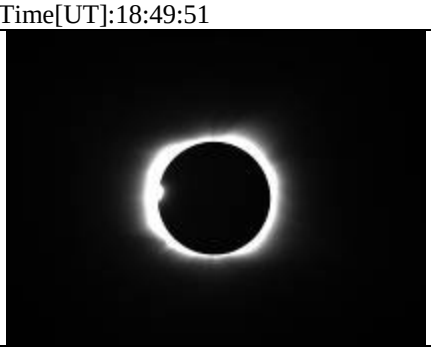
Eclipse Data

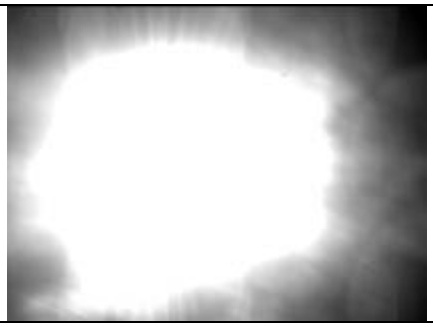
		
Filename: Eclipse-001_2.fit	Filename: Eclipse-001_2A.fit	Filename: Eclipse-001_4.fit
Exp Time[s]:2E-2	Exp Time[s]:2E-2	Exp Time[s]:4E-2
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:45:36	Time[UT]:18:45:40	Time[UT]:18:45:44
		
Filename: Eclipse-001_8.fit	Filename: Eclipse-001_16.fit	Filename: Eclipse-001_32.fit
Exp Time[s]:8E-2	Exp Time[s]:0.16	Exp Time[s]:0.32
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:45:48	Time[UT]:18:45:52	Time[UT]:18:45:56
		
Filename: Eclipse-001_64.fit	Filename: Eclipse-001_130.fit	Filename: Eclipse-001_250.fit
Exp Time[s]:0.64	Exp Time[s]:1.30	Exp Time[s]:2.50
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:46:00	Time[UT]:18:46:04	Time[UT]:18:46:09
		
Filename: Eclipse-001_500.fit	Filename: Eclipse-001_500dA.fit	Filename: Eclipse-001_250d.fit
Exp Time[s]:5.00	Exp Time[s]:5.00	Exp Time[s]:2.50
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:46:16	Time[UT]:18:46:25	Time[UT]:18:46:33

		
Filename: Eclipse-001_130d.fit	Filename: Eclipse-001_64d.fit	Filename: Eclipse-001_32d.fit
Exp Time[s]:1.30	Exp Time[s]:0.64	Exp Time[s]:0.32
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:46:40	Time[UT]:18:46:44	Time[UT]:18:46:49
		
Filename: Eclipse-001_16d.fit	Filename: Eclipse-001_8d.fit	Filename: Eclipse-001_4d.fit
Exp Time[s]:0.16	Exp Time[s]:8E-2	Exp Time[s]:4E-2
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:46:53	Time[UT]:18:46:56	Time[UT]:18:47:00
		
Filename: Eclipse-001_2d.fit	Filename: Eclipse-001_2dA.fit	Filename: Eclipse-001_16B.fit
Exp Time[s]:2E-2	Exp Time[s]:2E-2	Exp Time[s]:0.16
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:47:04	Time[UT]:18:47:07	Time[UT]:18:47:11
		
Filename: Eclipse-001_64B.fit	Filename: Eclipse-001_250B.fit	Filename: Eclipse-001_250dB.fit
Exp Time[s]:0.64	Exp Time[s]:2.50	Exp Time[s]:2.50
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:47:15	Time[UT]:18:47:19	Time[UT]:18:47:25

		
Filename: Eclipse-001_64dB.fit	Filename: Eclipse-001_16dB.fit	Filename: Eclipse-001_2dB.fit
Exp Time[s]:0.64	Exp Time[s]:0.16	Exp Time[s]: 2E-2
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:47:31	Time[UT]:18:47:35	Time[UT]:18:47:39
		
Filename: Eclipse-001_2dBf.fit	Filename: Eclipse-002_2.fit	Filename: Eclipse-002_2A.fit
Exp Time[s]:0.00	Exp Time[s]:2E-2	Exp Time[s]:2E-2
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:47:43	Time[UT]:18:47:46	Time[UT]:18:47:50
		
Filename: Eclipse-002_4.fit	Filename: Eclipse-002_8.fit	Filename: Eclipse-002_16.fit
Exp Time[s]:4E-2	Exp Time[s]:8E-2	Exp Time[s]:0.16
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:47:54	Time[UT]:18:47:57	Time[UT]:18:48:01
		
Filename: Eclipse-002_32.fit	Filename: Eclipse-002_64.fit	Filename: Eclipse-002_130.fit
Exp Time[s]:0.32	Exp Time[s]:0.64	Exp Time[s]:1.30
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:48:05	Time[UT]:18:48:09	Time[UT]:18:48:13

		
Filename: Eclipse-002_250.fit	Filename: Eclipse-002_500.fit	Filename: Eclipse-002_500dA.fit
Exp Time[s]:2.50	Exp Time[s]:5.00	Exp Time[s]:5.00
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:48:18	Time[UT]:18:48:24	Time[UT]:18:48:33
		
Filename: Eclipse-002_250d.fit	Filename: Eclipse-002_130d.fit	Filename: Eclipse-002_64d.fit
Exp Time[s]:2.50	Exp Time[s]:1.30	Exp Time[s]:0.64
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:48:41	Time[UT]:18:48:48	Time[UT]:18:48:52
		
Filename: Eclipse-002_32d.fit	Filename: Eclipse-002_16d.fit	Filename: Eclipse-002_8d.fit
Exp Time[s]:0.32	Exp Time[s]:0.16	Exp Time[s]:8E-2
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:48:57	Time[UT]:18:49:01	Time[UT]:18:49:05
		
Filename: Eclipse-002_4d.fit	Filename: Eclipse-002_2d.fit	Filename: Eclipse-002_2dA.fit
Exp Time[s]:4E-2	Exp Time[s]:2E-2	Exp Time[s]:2E-2
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:49:08	Time[UT]:18:49:12	Time[UT]:18:49:16

		
Filename: Eclipse-002_16B.fit	Filename: Eclipse-002_64B.fit	Filename: Eclipse-002_250B.fit
Exp Time[s]:0.16	Exp Time[s]:0.64	Exp Time[s]:2.50
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:49:19	Time[UT]:18:49:23	Time[UT]:18:49:27
		
Filename: Eclipse-002_250dB.fit	Filename: Eclipse-002_64dB.fit	Filename: Eclipse-002_16dB.fit
Exp Time[s]:2.50	Exp Time[s]:0.64	Exp Time[s]:0.16
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:49:33	Time[UT]:18:49:39	Time[UT]:18:49:44
		
Filename: Eclipse-002_2dB.fit	Filename: Eclipse-002_2dBf.fit	Filename: Eclipse-003_2.fit
Exp Time[s]:2E-2	Exp Time[s]:0.00	Exp Time[s]:2E-2
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:49:47	Time[UT]:18:49:51	Time[UT]:18:49:57
		
Filename: Eclipse-003_2A.fit	Filename: Eclipse-003_4.fit	Filename: Eclipse-003_8.fit
Exp Time[s]:2E-2	Exp Time[s]:4E-2	Exp Time[s]:8E-2
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:50:01	Time[UT]:18:50:05	Time[UT]:18:50:08

	
Filename: Eclipse-003_16.fit	Filename: Eclipse-003_32.fit
Exp Time[s]:0.16	Exp Time[s]:0.32
CCD Temp[C]: -30.125	CCD Temp[C]: -30.125
Time[UT]:18:50:12	Time[UT]:18:50:16

VLC-2 Data

The specifications of the instruments are the follows:

- Optics Canon EF-L 200mm f/2.8 + Canon 2x = 400mm focal length aperture f/5.6 used at f/6.3;
- Camera Canon EOS 50D 4752x3168 pixel;
- mount Astro-Physics 600E GTO.

Data description and data structure

The data acquired with the VLC-2 are images stored in n. 118 frames in *.CR2 a Canon raw format,

named as follow:

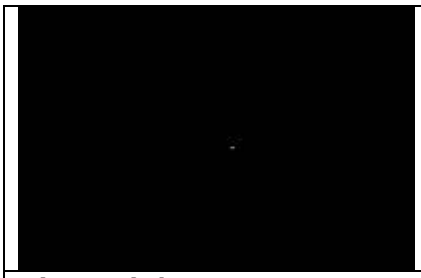
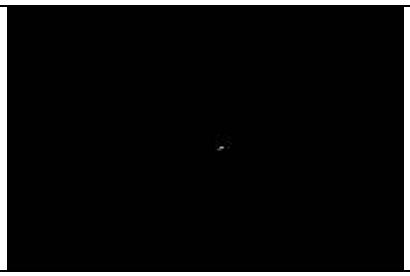
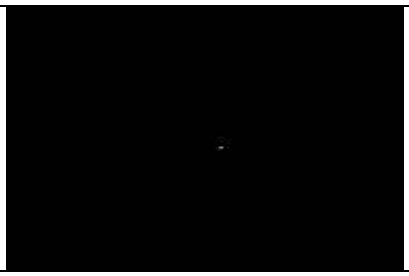
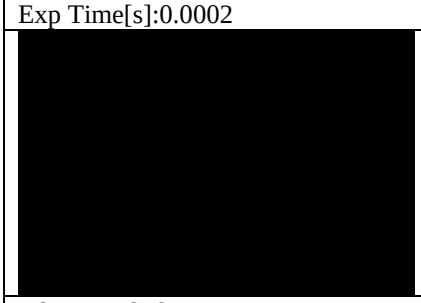
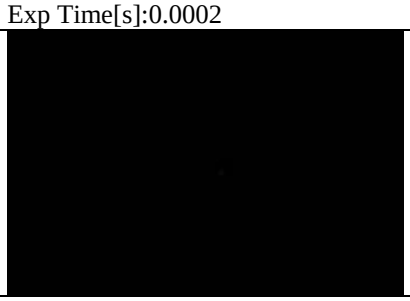
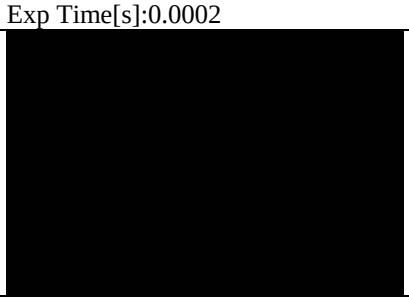
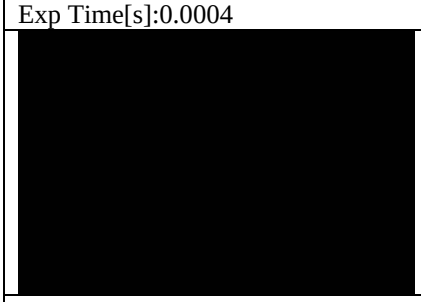
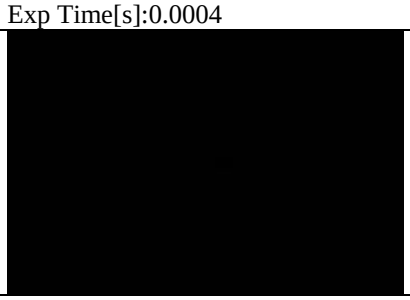
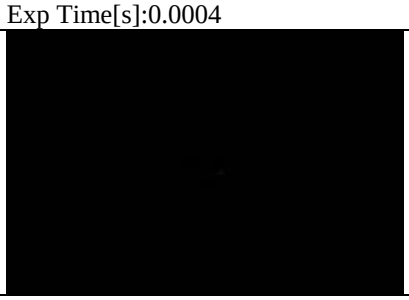
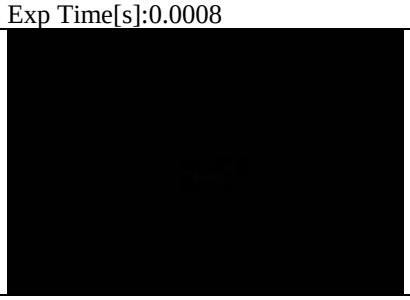
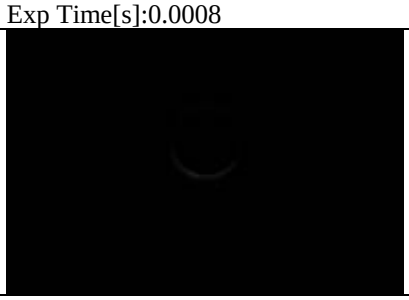
Image date/time (UT) exp_time (s)

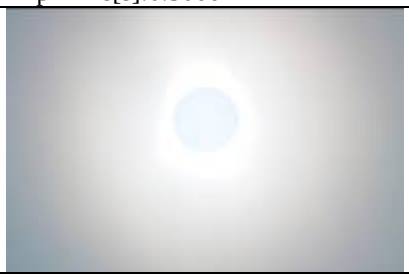
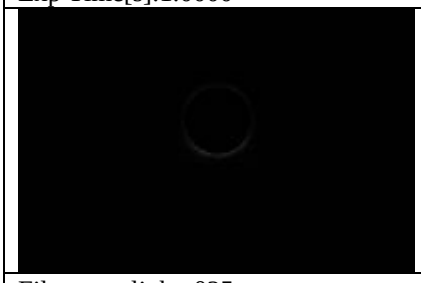
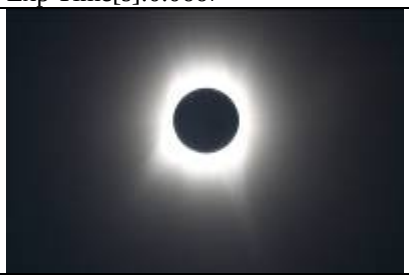
Light_001 2010/07/11 18:45:30.5 0.0125

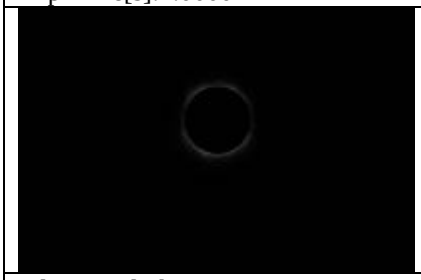
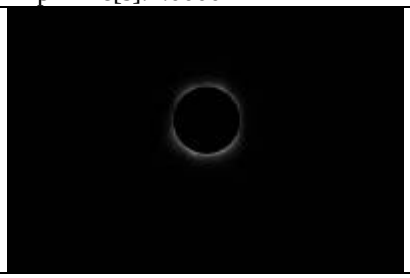
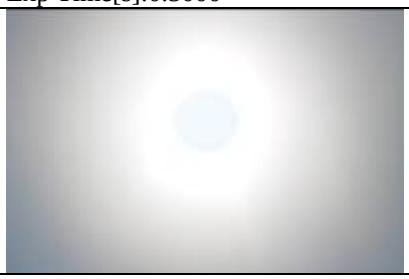
The light frames times are taken from GPS measurements and should be accurate to +/- 0.5 sec.

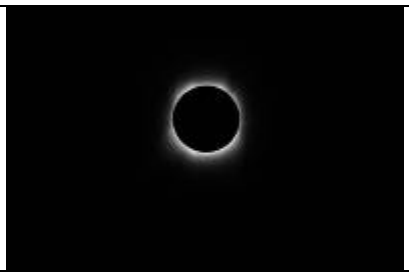
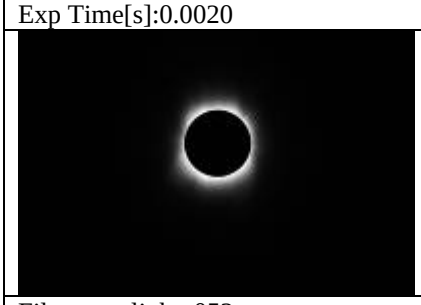
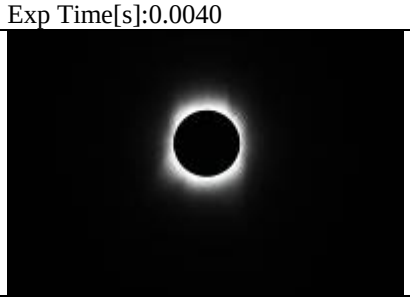
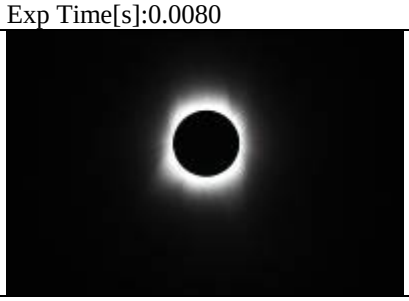
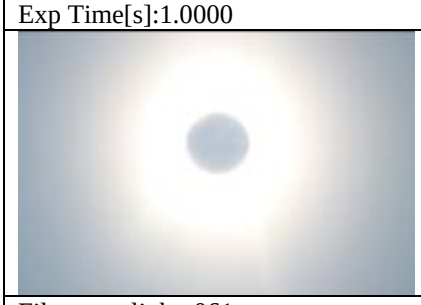
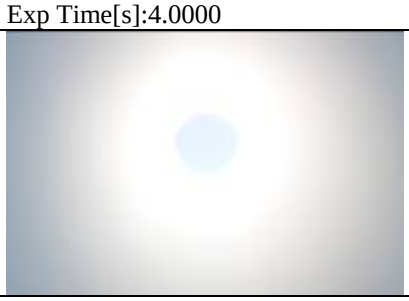
Eclipse Data

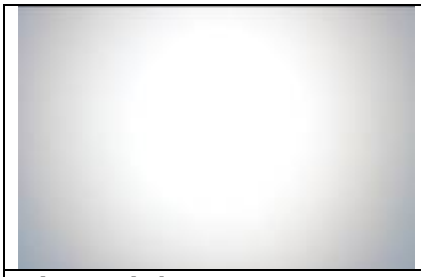
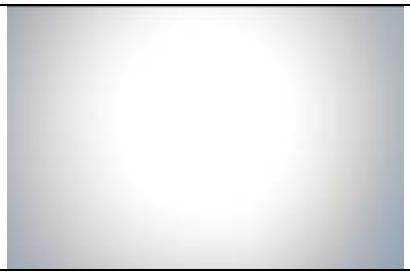
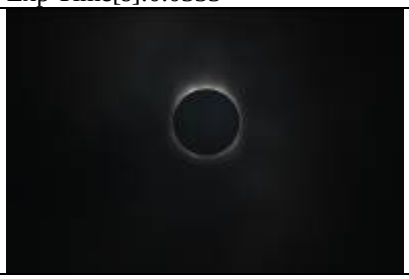
		
Filename: light_001	Filename: light_002	Filename: light_003
Time[UT]:18:45:30.5	Time[UT]:18:45:31.5	Time[UT]:18:45:32.5
Exp Time[s]:0.0125	Exp Time[s]:0.0125	Exp Time[s]:0.0125

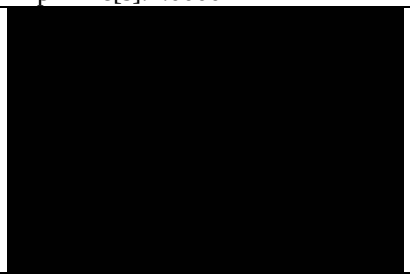
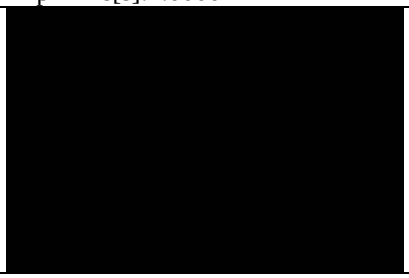
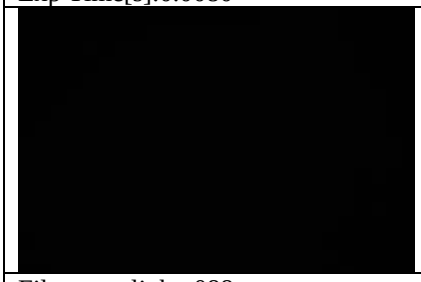
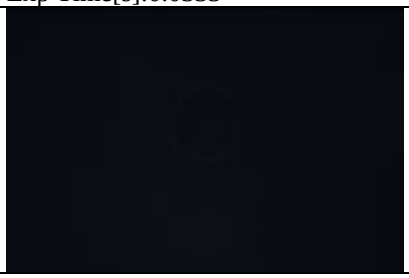
		
Filename: light_004	Filename: light_005	Filename: light_006
Time[UT]:18:45:33.5	Time[UT]:18:45:34.5	Time[UT]:18:45:35.5
Exp Time[s]:0.0002	Exp Time[s]:0.0002	Exp Time[s]:0.0002
		
Filename: light_007	Filename: light_008	Filename: light_009
Time[UT]:18:45:37.5	Time[UT]:18:45:38.5	Time[UT]:18:45:39.5
Exp Time[s]:0.0004	Exp Time[s]:0.0004	Exp Time[s]:0.0004
		
Filename: light_010	Filename: light_011	Filename: light_012
Time[UT]:18:45:40.5	Time[UT]:18:45:41.5	Time[UT]:18:45:42.5
Exp Time[s]:0.0008	Exp Time[s]:0.0008	Exp Time[s]:0.0008
		
Filename: light_013	Filename: light_014	Filename: light_015
Time[UT]:18:45:59.7	Time[UT]:18:46:00.6	Time[UT]:18:46:01.6
Exp Time[s]:0.0020	Exp Time[s]:0.0040	Exp Time[s]:0.0080
		
Filename: light_016	Filename: light_017	Filename: light_018
Time[UT]:18:46:02.6	Time[UT]:18:46:03.6	Time[UT]:18:46:04.7
Exp Time[s]:0.0167	Exp Time[s]:0.0333	Exp Time[s]:0.0667

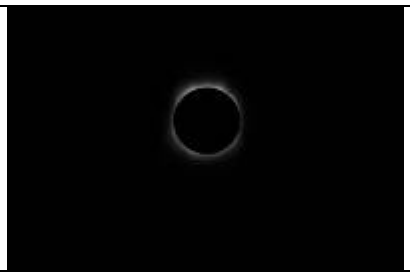
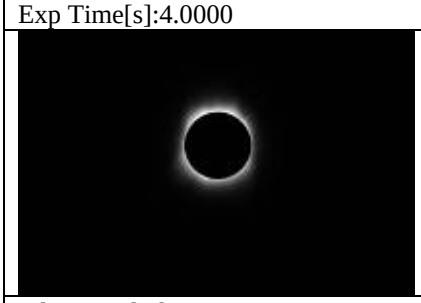
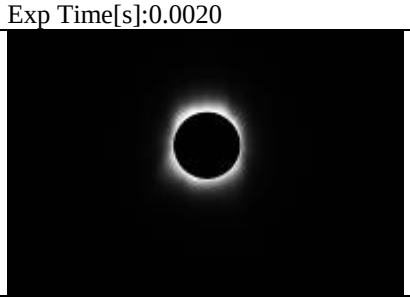
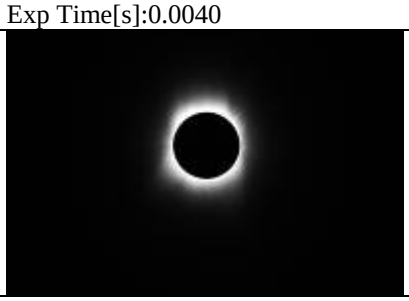
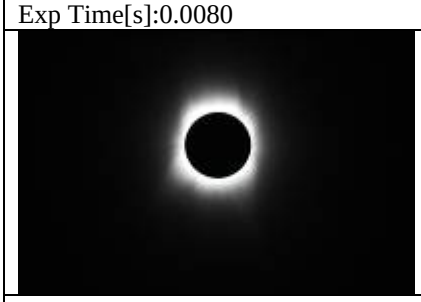
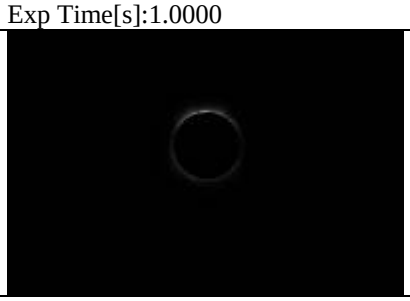
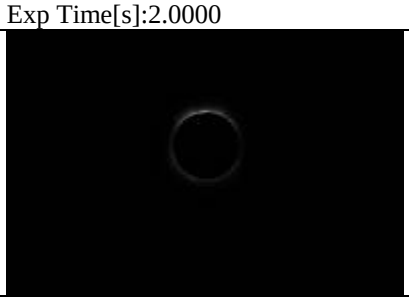
		
Filename: light_019	Filename: light_020	Filename: light_021
Time[UT]:18:46:05.8	Time[UT]:18:46:07.0	Time[UT]:18:46:08.4
Exp Time[s]:0.1250	Exp Time[s]:0.2500	Exp Time[s]:0.5000
		
Filename: light_022	Filename: light_023	Filename: light_024
Time[UT]:18:46:10.2	Time[UT]:18:46:12.8	Time[UT]:18:46:17.0
Exp Time[s]:1.0000	Exp Time[s]:2.000	Exp Time[s]:4.0000
		
Filename: light_025	Filename: light_026	Filename: light_027
Time[UT]:18:46:24.0	Time[UT]:18:46:25.0	Time[UT]:18:46:26.0
Exp Time[s]:0.0020	Exp Time[s]:0.0040	Exp Time[s]:0.0080
		
Filename: light_028	Filename: light_029	Filename: light_030
Time[UT]:18:46:27.1	Time[UT]:18:46:28.0	Time[UT]:18:46:29.1
Exp Time[s]:0.0167	Exp Time[s]:0.0333	Exp Time[s]:0.0667
		
Filename: light_031	Filename: light_032	Filename: light_033
Time[UT]:18:46:30.2	Time[UT]:18:45:31.4	Time[UT]:18:46:32.9
Exp Time[s]:0.0125	Exp Time[s]:0.2500	Exp Time[s]:0.5000

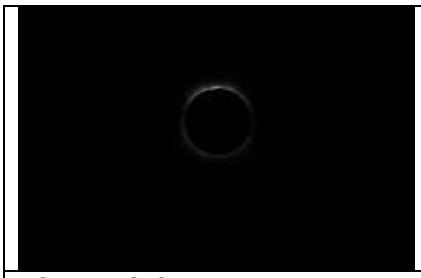
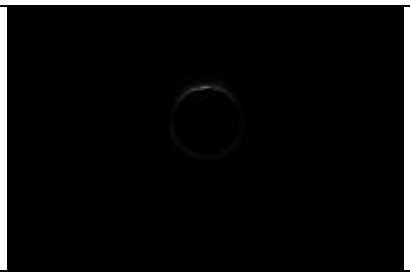
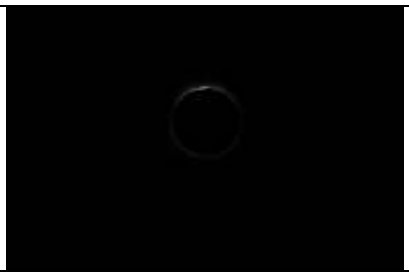
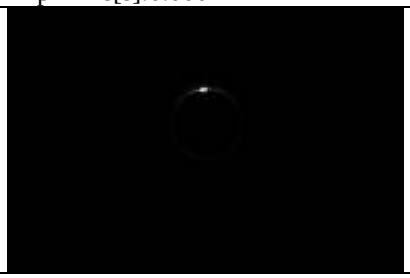
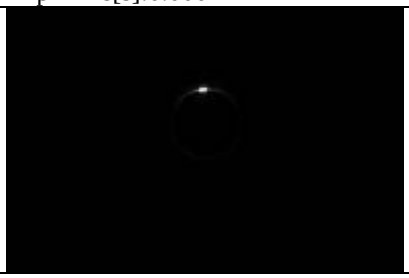
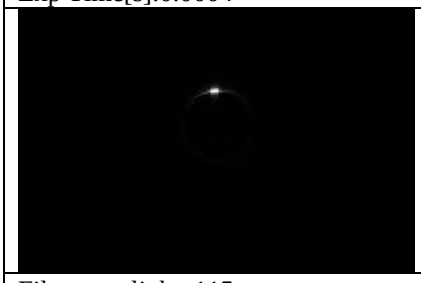
		
Filename: light_034	Filename: light_035	Filename: light_0036
Time[UT]:18:46:34.6	Time[UT]:18:46:37.2	Time[UT]:18:46:41.4
Exp Time[s]:1.0000	Exp Time[s]:2.0000	Exp Time[s]:4.0000
		
Filename: light_037	Filename: light_038	Filename: light_0039
Time[UT]:18:46:48.4	Time[UT]:18:46:49.4	Time[UT]:18:46:50.4
Exp Time[s]:0.0020	Exp Time[s]:0.0040	Exp Time[s]:0.0080
		
Filename: light_040	Filename: light_041	Filename: light_0042
Time[UT]:18:46:51.4	Time[UT]:18:46:52.4	Time[UT]:18:46:53.5
Exp Time[s]:0.0167	Exp Time[s]:0.0333	Exp Time[s]:0.0667
		
Filename: light_043	Filename: light_044	Filename: light_0045
Time[UT]:18:46:54.6	Time[UT]:18:46:55.8	Time[UT]:18:46:57.2
Exp Time[s]:0.1250	Exp Time[s]:0.2500	Exp Time[s]:0.5000
		
Filename: light_046	Filename: light_047	Filename: light_0048
Time[UT]:18:46:59.0	Time[UT]:18:47:01.6	Time[UT]:18:47:05.8
Exp Time[s]:1.0000	Exp Time[s]:2.0000	Exp Time[s]:4.0000

		
Filename: light_049	Filename: light_050	Filename: light_0051
Time[UT]:18:47:12.8	Time[UT]:18:47:13.58	Time[UT]:18:47:14.8
Exp Time[s]:0.0020	Exp Time[s]:0.0040	Exp Time[s]:0.0080
		
Filename: light_052	Filename: light_053	Filename: light_054
Time[UT]:18:47:15.8	Time[UT]:18:47:16.8	Time[UT]:18:47:17.8
Exp Time[s]:0.0167	Exp Time[s]:0.0333	Exp Time[s]:0.0667
		
Filename: light_055	Filename: light_056	Filename: light_0057
Time[UT]:18:47:18.9	Time[UT]:18:47:20.1	Time[UT]:18:47:21.5
Exp Time[s]:0.1250	Exp Time[s]:0.2500	Exp Time[s]:0.5000
		
Filename: light_058	Filename: light_059	Filename: light_060
Time[UT]:18:47:23.3	Time[UT]:18:47:25.9	Time[UT]:18:47:30.1
Exp Time[s]:1.0000	Exp Time[s]:2.0000	Exp Time[s]:4.0000
		
Filename: light_061	Filename: light_062	Filename: light_063
Time[UT]:18:47:37.7	Time[UT]:18:47:44.3	Time[UT]:18:47:51.2
Exp Time[s]:6.0000	Exp Time[s]:6.0000	Exp Time[s]:6.0000

		
Filename: light_064	Filename: light_065	Filename: light_066
Time[UT]:18:47:58.2	Time[UT]:18:48:05.1	Time[UT]:18:48:12.5
Exp Time[s]:6.0000	Exp Time[s]:6.0000	Exp Time[s]:0.2500
		
Filename: light_067	Filename: light_068	Filename: light_069
Time[UT]:18:48:13.9	Time[UT]:18:48:15.7	Time[UT]:18:48:18.3
Exp Time[s]:0.5000	Exp Time[s]:1.0000	Exp Time[s]:2.0000
		
Filename: light_070	Filename: light_071	Filename: light_072
Time[UT]:18:48:22.5	Time[UT]:18:48:29.5	Time[UT]:18:48:30.5
Exp Time[s]:4.0000	Exp Time[s]:0.0020	Exp Time[s]:0.0040
		
Filename: light_073	Filename: light_074	Filename: light_075
Time[UT]:18:48:31.6	Time[UT]:18:48:32.5	Time[UT]:18:48:33.5
Exp Time[s]:0.0080	Exp Time[s]:0.0167	Exp Time[s]:0.0333
		
Filename: light_076	Filename: light_077	Filename: light_078
Time[UT]:18:48:34.6	Time[UT]:18:48:35.7	Time[UT]:18:48:36.9
Exp Time[s]:0.0667	Exp Time[s]:0.1250	Exp Time[s]:0.2500

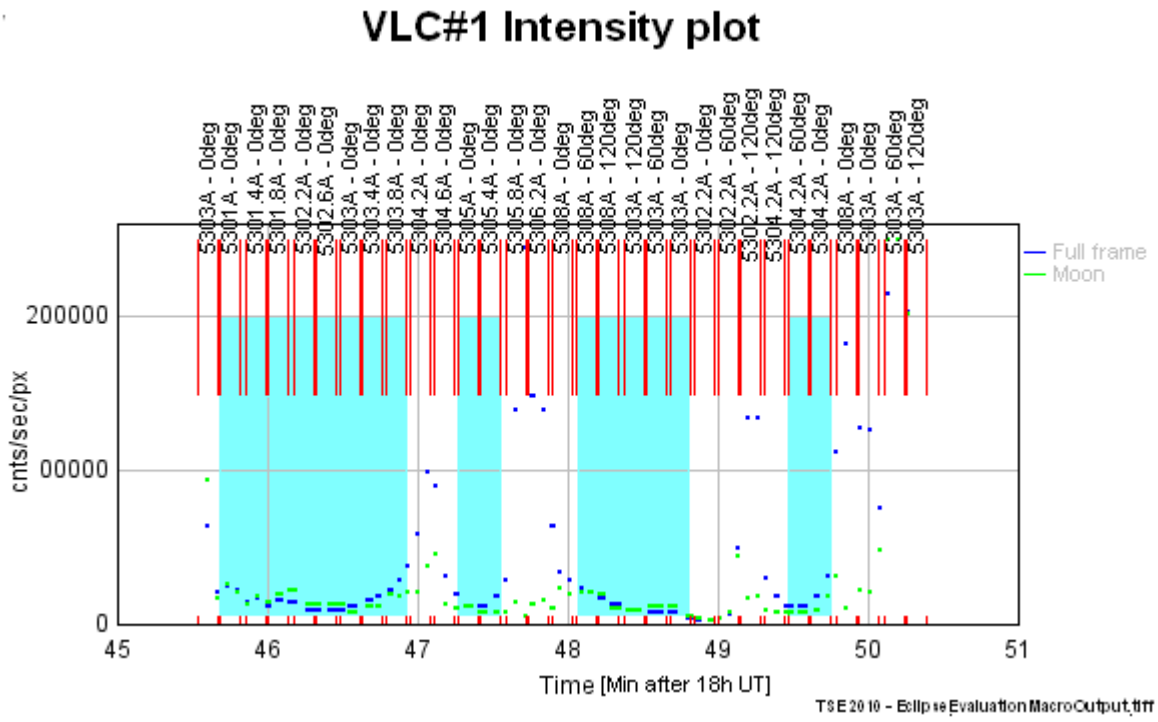
		
Filename: light_079	Filename: light_080	Filename: light_081
Time[UT]:18:48:38.3	Time[UT]:18:48:40.1	Time[UT]:18:48:42.7
Exp Time[s]:0.5000	Exp Time[s]:1.0000	Exp Time[s]:2.0000
		
Filename: light_082	Filename: light_083	Filename: light_084
Time[UT]:18:48:46.9	Time[UT]:18:48:54.0	Time[UT]:18:48:54.9
Exp Time[s]:4.0000	Exp Time[s]:0.0020	Exp Time[s]:0.0040
		
Filename: light_085	Filename: light_086	Filename: light_0087
Time[UT]:18:48:55.9	Time[UT]:18:48:56.9	Time[UT]:18:48:57.9
Exp Time[s]:0.0080	Exp Time[s]:0.0167	Exp Time[s]:0.0333
		
Filename: light_088	Filename: light_089	Filename: light_090
Time[UT]:18:48:59.0	Time[UT]:18:49:00.1	Time[UT]:18:49:01.3
Exp Time[s]:0.0667	Exp Time[s]:0.1250	Exp Time[s]:0.2500
		
Filename: light_091	Filename: light_092	Filename: light_093
Time[UT]:18:49:02.7	Time[UT]:18:49:04.5	Time[UT]:18:49:07.2
Exp Time[s]:0.5000	Exp Time[s]:1.0000	Exp Time[s]:2.0000

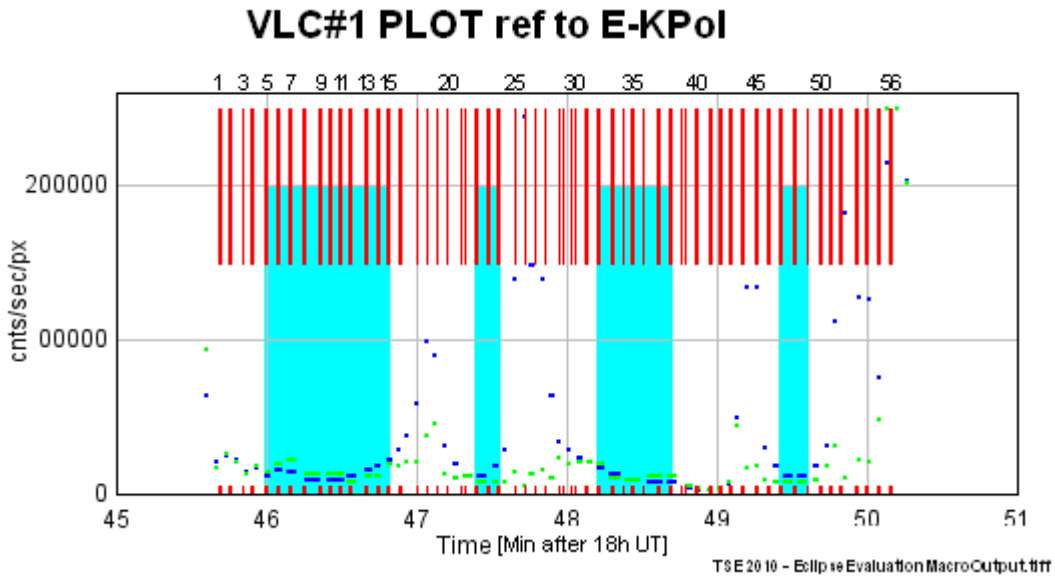
		
Filename: light_094	Filename: light_095	Filename: light_096
Time[UT]:18:49:11.3	Time[UT]:18:49:18.3	Time[UT]:18:49:19.3
Exp Time[s]:4.0000	Exp Time[s]:0.0020	Exp Time[s]:0.0040
		
Filename: light_097	Filename: light_098	Filename: light_099
Time[UT]:18:49:20.3	Time[UT]:18:49:21.3	Time[UT]:18:49:22.3
Exp Time[s]:0.0080	Exp Time[s]:0.0167	Exp Time[s]:0.0333
		
Filename: light_100	Filename: light_101	Filename: light_102
Time[UT]:18:49:23.4	Time[UT]:18:49:24.5	Time[UT]:18:49:25.7
Exp Time[s]:0.1250	Exp Time[s]:0.1250	Exp Time[s]:0.2500
		
Filename: light_103	Filename: light_104	Filename: light_105
Time[UT]:18:49:27.1	Time[UT]:18:49:28.9	Time[UT]:18:49:31.5
Exp Time[s]:0.5000	Exp Time[s]:1.0000	Exp Time[s]:2.0000
		
Filename: light_106	Filename: light_107	Filename: light_108
Time[UT]:18:49:35.7	Time[UT]:18:49:59.0	Time[UT]:18:50:00.0
Exp Time[s]:4.0000	Exp Time[s]:0.0008	Exp Time[s]:0.0008

		
Filename: light_109	Filename: light_110	Filename: light_111
Time[UT]:18:50:00.9	Time[UT]:18:50:01.9	Time[UT]:18:50:02.9
Exp Time[s]:0.0008	Exp Time[s]:0.0004	Exp Time[s]:0.0004
		
Filename: light_112	Filename: light_113	Filename: light_114
Time[UT]:18:50:03.9	Time[UT]:18:50:05.9	Time[UT]:18:50:06.9
Exp Time[s]:0.0004	Exp Time[s]:0.0002	Exp Time[s]:0.0002
		
Filename: light_115	Filename: light_116	Filename: light_117
Time[UT]:18:50:07.9	Time[UT]:18:50:09.0	Time[UT]:18:50:09.9
Exp Time[s]:0.0002	Exp Time[s]:0.0125	Exp Time[s]:0.0125
		
Filename: light_118		
Time[UT]:18:50:11.0		
Exp Time[s]:0.0125		

Evaluation of clouds effects

During the eclipse totality, the sky was occasionally covered by clouds. Due to the polarization effect of the clouds, the estimation of the number of frames without clouds is difficult for CorMag and E-KPol (both measure the polarization). Using the VLC-1 data, we have estimated when, temporally, the sky was cloudy [CAP]. The results show that the about the 50% of the CorMag and the 60% of the E-KPol frames present some effect due to the clouds. The frames without clouds are the cyan region of the following plots.





Ancillary Data

Joint observations for Total Solar Eclipse 11 July 2010 at 18:48 UT in Tatakoto island

UVCS observations

1) OVI Observation Sequence (1032 A and 1037 A lines):

All observations use 75 um slit
Spatial resolution 7.5 arcminutes

Start (UT)	End (UT)	Duration	Position	Height (Heliocen.)
20:38 Fri (9july)	2:18 Sat	29:40	90 deg	2.45 Rsun
2:18 Sat (10july)	5:58 Sun	3:40	90 deg	1.9 Rsun
5:58 Sun (11july)	9:38 Sun	3:40	85 deg	1.9 Rsun
9:38 Sun (11july)	13:18 Sun	3:40	95 deg	1.9 Rsun
13:18 Sun (11july)	16:58 Sun	3:40	90 deg	1.8 Rsun
16:58 Sun (11july)	20:38 Sun	3:40	85 deg	1.8 Rsun (during eclipse time)
20:38 Sun (11july)	0:18 Mon	3:40	95 deg	1.8 Rsun
0:18 Mon (12july)	3:58 Mon	3:40	90 deg	1.7 Rsun
3:58 Mon (12july)	7:38 Mon	3:40	85 deg	1.7 Rsun
7:38 Mon (12july)	11:18 Mon	3:40	95 deg	1.7 Rsun

2) HI Lya Observations Sequence (HI Lya detector):

All observations use 75 um slit

From Monday 12 July to Wednesday 14 July

Height: 1.8, 1.95, 2.2, 2.45, 2.7 Rsun
Same roll angles as for OVI observations (more details when we receive the data)

Stereo pB measurements

COR 1: every 5 minutes (STEREO-A), every 10 minutes (STEREO-B) starting at 00:00
COR 2: every hour

LASCO pB observations

No support for pB measurements

Mark IV Mauna Loa pB measurements

Observations on July 11 from 16:45 to 22:26 UT

Evans Solar Facility at NSO/Sac Peak – FeXIV line observations

Bad weather - no observations

References

[CAP] Capobianco – *Valutazione degli effetti della nuvolosità sui dati acquisiti durante l'eclisse totale di sole dell'11 luglio 2010* – OATo Technical Report (in progress)

[ESP] Espenak and Anderson - *Annular and Total Solar Eclipses of 2010.*

[FIN] Fineschi et al. – *Total Solar eclipse of 29 March, 2006: Data Log and Raw Images* – OATo Technical report nr. 80.