

Some remarks on solar eclipses

Flash spectrum at 3th contact of the solar eclipse of July 22, 2009

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This flash spectrum was recorded at 3th contact using a digital camera, equipped with a 200mm lens. In front of the lens, a 60 mm 3x60 ° BK7 Glass prism was positioned. Around 3th contact eleven pictures were shot in rapid succession. The “best” one was then chosen for further processing by visual inspection.



To record the spectrum over the long side of the image and parallel to the vertex angle of the contact point (352 °), the camera system was tilted by 90 °.

Original image of the flash spectrum. For the creation of the numerical spectrum, only the image information below the bright line (caused by a Bailey bead) was used.

Technical data

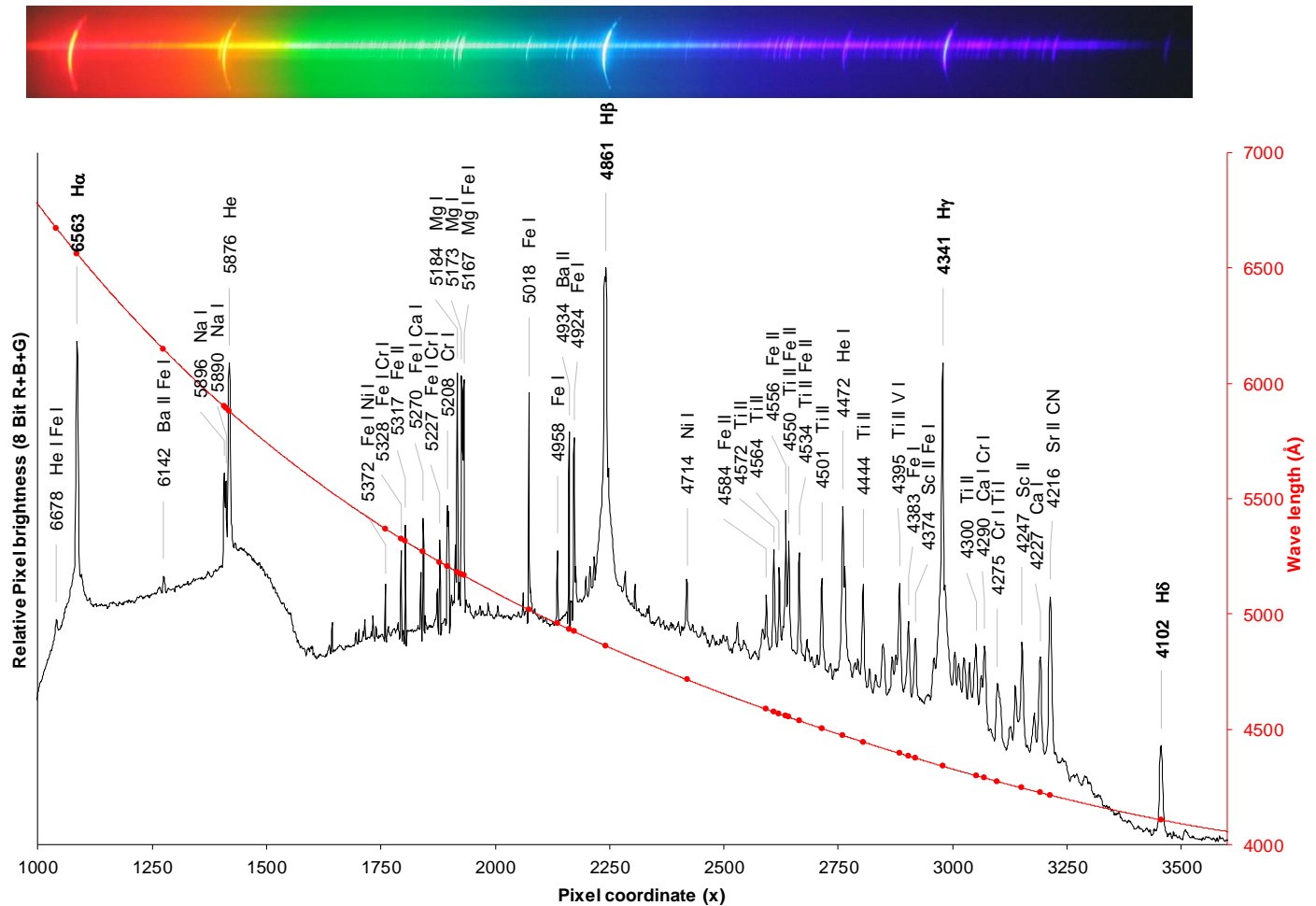
Camera: Canon EOS 400D
Lens: Canon Lens EF 200 mm 1:2.8 L II
ExposureTime: 1/15 seconds
FNumber: 2.80
ISOSpeed: 400

ImageWidth: 3888
ImageHeight: 2592
White Balance: Auto
Quality: Fine JPG
(RAW would give better results)

Data processing steps

In a first step, the original image was rotated clockwise by 0.55° in order to align the spectrum with the long axis of the image. Then, the image information (RGB values, all three values in the range 0 - 255) of the nine image rows below the partially overexposed zone was summed for each pixel x-coordinate.

(In this crude data evaluation (JPG data only), no background correction was applied, and no correction for the "tilt" angle of the spectral lines (or arcs) was applied).



The labeled peaks were identified according to data published in <http://www.eurastro.de/spectro/tse08/DADOS/flashdados.htm> by Manfred Rudolf.

The red curve shows the dispersion curve of the glass prism.