Estudio Ultravioleta de la Nebulosa del Cangrejo (The Crab – M 1 – in the UV)

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The Crab is one of the most observed objects with XMM-Newton: it is a calibration source for the X-ray cameras. In these observations the Optical Monitor (OM) is used as well, mainly with the UV filters. The XMM-Newton Science Archive contains more than 80 observations of the Crab obtained between 2000 and 2016:

The Optical-UV Monitor (30 cm diameter telescope) provides simultaneous observations in a 17x17 arcmin² field of view with the X-ray instruments on board XMM-Newton (Mason et al, 2001)

Optical Monitor filters wavelength (nm):

- UVW2: 212
- UVM2: 231
- UVW1: 291
- 344 • U: • B: 450







200 300 400 500 600 700 800 100

The Crab in the UV

- We present observations of the Crab obtained with the OM instrument on board XMM-Newton between 2000 and 2015.
- The data have been processed using the XMM Science Analysis Software (SAS).
- The displayed images are the result of co-adding several individual exposures using the SAS task ommosaic: stars in the field show the quality of the astrometric alignment.
- The complex structure of the nebula is enhanced in the stacked images.
- Processing with SAS allows us to obtain absolutely calibrated photometry of all sources in the f.o.v. in particular the M1 pulsar.
- The data can be obtained from the XMM-Newton Science Archive http://www.cosmos,esa.int/web/xmm-newton/xsa





Composite OM image of the Crab (UVM2, UVW1 and U)



Composite: X-ray (Chandra), V (HST), Radio (NRAO) (Credit: NASA, NRAO / J. Hester et al)

Blue: X

The size of all displayed images is 8x8 arcmin²



co-added using SAS: UVW1: 75 exposures 221241 sec UVM2: 15 exp. 50459 sec UVW2: 14 exp. 46242 sec

Colour scales and cuts have been chosen to show the pulsar. The central torus and the jets, first discovered in X-rays and radio, are clearly visible also in the three OM UV filters.