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EANweb NEWSLETTER Astronomy: 13th February, "WORLDS OF THE SKY" project, extrasolar planet transit on the web

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European Astrosky Network - Italy

(a cura di Rodolfo Calanca e Angelo Angeletti)

www.crabnebula.it/rc/menu_EAN.htm

Web-TV: www.livestream.com/eantv



REMEMBER:

**13th February 2010, 19h UT: PUBLIC OBSERVATION OF EXTRA SOLAR
PLANET XO-3b TRANSIT FROM EVERY EUROPEAN ASTRONOMICAL
OBSERVATORIES**

ON WEB-TV and CHAT: www.crabnebula.it!

English language for foreign users



**SCIENTIFIC REFERENT FOR ITALY:
INAF BRERA AND PALERMO ASTRONOMICAL OBSERVATORIES**

- Materials and document: www.crabnebula.it/web/doc_transits/index.htm

**AN INVITATION TO WATCH
THE TRANSIT OF EXTRASOLAR PLANET XO-3b FROM EUROPEAN ASTRONOMICAL
OBSERVATORIES
ALL AMATEURS ARE WARMLY INVITED TO SHOOT THE TRANSITS WITH PROPER
TELESCOPES!**

"WORLDS OF THE SKY" Project intends to approach the great but inexperienced public wishing to visit our Observatories as astronomy "fans" and to watch live an extra solar planet transit. In details, on next 13th February (starting at 07.00 p.m.) many Italian and European Observatories will place their instrumentation at public's disposal to "observe" XO-3b planet.

The italian astronomer Stefano Covino (Osservatorio Astronomico INAF di Brera - www.mi.astro.it) writes:
"Observing extra-Solar planet transits is a valuable scientific tool. However, even more than that, it is a fascinating way to look at other worlds. The existence of planets around other stars beyond our Sun has been conjectured since the beginning of human history, and the same idea has also been able to raise fundamental enthusiasms and criticisms in equal percentage. Philosophy, theology and even psychology have been involved to explain the importance of this recurrent idea in human history. Here, we review how since the Hellenistic era the hypothesis of many worlds developed and also describe an international event we are organizing with the aim to secure multi-site observations of a planet transit. **WORLDS OF THE SKY Project** is an example of science in the internet era".

A short summary of digital imaging of the Transit

Here are some remarks on the process of acquiring digital frames of the transit.

- Always wait for the instrumentation to thermally stabilize before starting a working session.
- Set the **MINIMUM** integration time via the **atmospheric scintillation** formula (see paragraph 1). Make sure to insert the correct data for telescope aperture and air mass in the field. Exposure times can always be increased, provided you have a good telescope drive -

better still, an auto-drive device. However, always bear in mind the remarks in the following.

- **NO SATURATED PIXELS WHATSOEVER ARE ALLOWED IN YOUR IMAGES.** To attain a high photometric precision, **the ADU level of the brightest pixel in the frame must be kept, more or less, at 25000 ADU** (for a 16 bit-CCD camera) **or 1800 ADU** (for a 12-bit CCD or digital camera). In case the exposure time obtained from the atmospheric scintillation formula is too long – which in turn would saturate the star's image – there are two ways to keep it below the saturation threshold: 1) by interposing a filter (R, V, I or neutral) to attenuate the incoming light flux and reach, at least, the minimum integration time; 2) by defocusing the star's image twice or thrice the FWHM (Frequency Width at Half Maximum).
- Once exposure time has been determined, perform some test imaging on the chosen stellar field, checking (using Astroart or MaxIm) the *S/N* (signal-to-noise) ratio for the parent star as well as for the reference ones. For the uncertainty of measurements to stay below 0.002 magnitudes, the *S/N* ratio should be at least 500. If the *S/N* ratio is less than the required minimum value, we should expect to attain a lower photometric precision.
- Frames are to be taken about every two minutes. Imaging must start – at least – half an hour before transit begins and must end not earlier than half an hour after the transit is over.
- Quality of flat fields decisively influences photometric accuracy. Making a lot of flats (up to several tens) and averaging has the effect to reduce Poisson noise. For the same reason, a great number of dark and bias frames is needed.



http://www.youtube.com/watch?v=L38RU0GT_70

In this IMPORTANT video, prof. Angelo Angeletti describes the procedure for imaging transits of Extrasolar Planets, English translation by prof. Manlio Bellesi



<http://www.youtube.com/watch?v=wsbW5TRo9g0>

Astronomers of INAF - Brera Astronomical Observatory: Paolo D'Avanzo, Jirong Mao and Christina Thoene
This movie is in Italian, English and Chinese

LINKS OF "WORLDS OF THE SKY" PROJECT

- INAF - Brera Astronomical Observatory: www.mi.astro.it/
- INAF - Palermo Astronomical Observatory: www.astropa.unipa.it/
- Info technical informations in english: www.crabnebula.it/web/doc_transits/index.htm
- <http://exoplanet.eu/>
- Info extrasolar planet transit of Czech Astronomical society: <http://var2.astro.cz/ETD/index.php>
- AAVSO extrasolar observing: www.aavso.org/observing/programs/ccd/transitsearch.shtml
- Bruce Gary tutorial: http://brucegary.net/tutorial_exoplanet/
- Italian webzine L'ASTROFILO: www.astropublishing.com/
- SKYLIVE Project (english): www.skylive.it/skylive-new/index.php?lan=en
- XO-3b Transit Campaign, Poland page: http://www.astroamator.info/astronomia_educacyjna_-_tranzyt_xo-3b_dla_merate/projek_zaproszenie_i_informacje_podstawowe.html

An initiative promoted by:

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SKYLIVE no-profit Association

