COATLI and DDOTI, the new telescopes to catch transients

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Observatory

Observatorio Astronómico Nacional, San Pedro Mártir, Ensenada. (2700m amsl)
COATLI
COATLI
Corrector de Óptica Áctiva y de Tilts al Límite de dlfraccción or active optics and tilts corrector at the diffraction limit
GOAL: High resolution images
COATLI collaboration


México.
Features of COATLI

★ Robotic
★ φ=50cm.
★ 2 channels (COATLI means twins in Nahuatl).
★ gri-bands.
★ FWHM=0.3” image quality.
★ Limited by diffraction.
★ Fast mount.
How to achieve the high quality?

★ An open enclosure.
★ An elevated enclosure in a good site for seeing.
★ A red channel operating from 550-920 nm with a CCD.
★ A blue channel EMCCD for tilt correction.
★ A fast tilt mirror correcting both channels.
★ A deformable mirror for active optics.
★ Guide star (isokinetic angle).
★ A robotic control system.
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Prompt emission of GRBs (my PhD thesis)
Location of gamma-ray bursts in their host galaxies.
Eclipsing binaries in the Trapezium.
HII regions in nearby galaxies.
Galactic star clusters.
Sub-stellar companions in the Solar neighborhood
Multiplicity in young clusters
Planetary nebulae in the bulge
Status of COATLI

★ We have an interim system.
★ The pipeline of data reduction is finished.
★ Three GCN of GRBs emissions at this moment.
★ $m=18$ with 5s and $m=21-22$ (in hours)
★ We are ready to response to the BAT alerts :D
DDOTI
GOAL: Counterpart of GWs
DDOTI collaboration


México, USA, France.
DDOTI

- Deca-Degree Optical Transient Imager
- Connected with Fermi (100 deg$^2$, 250, GBRs/year 45 SGBRs/y)
- Connected with Ligo (100 deg$^2$)
- DDOTI will attempt to follow-up the Fermi/GBM GRB.
- Field of 12 deg$^2$ for each telescope
- The combined field will be of 72 deg$^2$
Deca-Degree Optical Transient Imager

Connected with Fermi (100 deg$^2$-250, GBRs/year, 45 SGBRs/y)

Connected with Ligo (100 deg$^2$)

DDOTI will attempt to follow-up the Fermi/GBM GRB.

Field of 12 deg$^2$ for each telescope

The combined field will be of 72 deg$^2$
With only two telescopes...
We can reduct the error box of Fermi/LIGO.

More field at the same time.
Status of DDOTI

★ It ended the test phase.
★ Observing now.
★ Better fortune
★ We are expecting for a lot of GWs now...
Summary, COATLI and DDOTI

- Robotic.
- Cheaper than other telescopes ($500k).
- Very fast installation.
- Designed for transients (GRBs, GWs).
More information:

*COATLI: an all-sky robotic optical imager with 0.3 arcsec image quality*: https://arxiv.org/pdf/1606.00690.pdf

*DDOTI: the deca-degree optical transient imager*

Thanks :)