



# Observing Application

Date : Dec, 02 2011  
 Proposal ID : VLA/11B-237  
 Legacy ID : AL803  
 PI : Cornelia Lang  
 Type : Director's Discretionary  
 Time - Target of Opportunity  
 Category : Energetic Transients and Pulsars  
 Total Time : 6.5

## EVLA Monitoring of HESS J0632+057 During Current Gamma-ray Outburst

### Abstract:

We propose a radio monitoring campaign of HESS J0632+057, the fourth VHE ( $E > 100$  GeV) gamma-ray binary to be discovered, which has recently undergone a gamma-ray flare (ATEL #3791). Contemporaneously probing the broad band spectral energy distribution down to radio wavelengths as the source transitions in activity in both gamma rays and X-rays will allow for more accurate modeling of the environment in HESS J0632+057 that leads to the observed broad band emission. We propose to use the EVLA at 5 GHz to make a series of 10 observations of HESS J0632+057 (monitoring would be every five days over the course of 50 days). We request that the observations begin as soon as possible (hopefully during the week of 5-9 Dec 2011). In addition, we request 3 fixed date observations corresponding to the anticipated peak in VHE emission, the high X-ray state and the low X-ray state. The total requested observing time is 6.5 hours. Contemporaneous X-ray and VHE gamma-ray observations will be carried out as part of this monitoring campaign.

### Authors:

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### Related proposals:

### Joint:

Not a Joint Proposal

### Observing type(s):

Continuum, Single Pointing(s)

### VLA Resources

| Name | Conf. | Frontend & Backend | Setup |
|------|-------|--------------------|-------|
|------|-------|--------------------|-------|

| Name          | Conf. | Frontend & Backend  | Setup  |
|---------------|-------|---|--|
| 5 GHz Monitor | D     | C Band 6 cm 4000-8000 MHz<br>WIDAR OSRO1: 2<br>Subbands/Full polz | Rest frequencies: 5000.0,6000.0 MHz<br>Subband Bandwidth: 128.0 MHz<br>No. of Channels: 64<br>Poln. products: 4.0<br>Channel Width: 2000.0 kHz |

### Sources:

| Name  | Position          |                            | Velocity   |       | Group          |
|-------|-------------------|----------------------------|------------|-------|----------------|
| J0632 | Coordinate System | Equatorial                 | Convention | Radio | HESS J0632+057 |
|       | Equinox           | J2000                      |            |       |                |
|       | Right Ascension   | 06:32:59.26<br>00:00:00.0  | Ref. Frame | LSRK  |                |
|       | Declination       | +05:48:01.16<br>00:00:00.0 | Velocity   | 0.00  |                |

### Sessions:

| Name               | Session Time (hours) | Repeat | Separation | LST minimum | LST maximum | Elevation Minimum |
|--------------------|----------------------|--------|------------|-------------|-------------|-------------------|
| Monitor            | 0.50                 | 10     | 5 day      | 04:00:00    | 08:00:00    | 0                 |
| Fixed: 11 Dec 11   | 0.50                 | 1      | 0 day      | 04:00:00    | 08:00:00    | 0                 |
| Fixed: 25 Dec 11   | 0.50                 | 1      | 0 day      | 04:00:00    | 08:00:00    | 0                 |
| Fixed: 23 Jan 2012 | 0.50                 | 1      | 0 day      | 04:00:00    | 08:00:00    | 0                 |

### Session Constraints:

| Name | Constraints | Comments |
|------|-------------|----------|
|      |             |          |

### Session Source/Resource Pairs:

| Session Name       | Source | Resource      | Time     | Figure of Merit | Subarray |
|--------------------|--------|---------------|----------|-----------------|----------|
| Monitor            | J0632  | 5 GHz Monitor | 0.5 hour | 0.015 mJy/bm    |          |
| Fixed: 11 Dec 11   | J0632  | 5 GHz Monitor | 0.5 hour | 0.015 mJy/bm    |          |
| Fixed: 25 Dec 11   | J0632  | 5 GHz Monitor | 0.5 hour | 0.015 mJy/bm    |          |
| Fixed: 23 Jan 2012 | J0632  | 5 GHz Monitor | 0.5 hour | 0.015 mJy/bm    |          |

Present for observation: no

Staff support: None

Plan of Dissertation: no