



Observing Application

Date : Feb, 18 2012
 Proposal ID : VLBA/12A-453
 Legacy ID : BM370
 PI : Sera Markoff
 Type : Director's Discretionary
 Time - Target of
 Opportunity
 Category : Active Galactic Nuclei
 Total Time : 24.0

TRIGGERING VLBA ON SGR A* FLARES: THE SEARCH FOR VARIABLE STRUCTURE

Abstract:

The upcoming Chandra 3 Ms campaign on Sagittarius A* and the associated multi-wavelength campaigns involving ground- and space-based facilities presents an unprecedented opportunity to characterize one of the most important and enigmatic astrophysical sources. High angular resolution radio observations can probe the structure of a jet and/or accretion flow in the source. Past VLBA observations in the quiescent state constrain the size of Sgr A* but do not constrain the morphology well. We propose new target of opportunity observations that are triggered by flares detected in the near-infrared (NIR). NIR flares can be detected within minutes at the VLT, leading to VLBA follow-up within less than an hour. Theoretical models predict a time delay of approximately one to a few hours between NIR flares and radio wavelength activity. Such activity could lead to structural changes in the source, possibly including appearance of a jet or outflow component.

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Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLBA Resources

| Name | Details | Stations | Observing Parameters | Correlation Parameters |
|------|--|--|---|---|
| 7mm | Wavelength: 7 mm Processor: Socorro-DiFX Observing Standard | VLBA <input checked="" type="checkbox"/> Br <input checked="" type="checkbox"/> Fd <input checked="" type="checkbox"/> Hn <input checked="" type="checkbox"/> Kp <input checked="" type="checkbox"/> La <input checked="" type="checkbox"/> Mk <input type="checkbox"/> NI <input checked="" type="checkbox"/> Ov <input checked="" type="checkbox"/> Pt <input checked="" type="checkbox"/> Sc <input type="checkbox"/> HSA Ar Ef GBT VLA-Y27 VLA-Y1 Geodetic | Bandwidth: 32 MHz Baseband 16 Channels Sample Rate (Msample/s) Bits/Sample 2 Polarization Dual Agg. Bit Rate 2048 (Mbits/sec) | Full Polarization Pulsar Gate Correlator Passes 1 Integration Period (sec) 2.0 Spectral Points /BBC 8 No of Fields 1 |

Sources:

| Name | Position | | Velocity | | Group |
|--------|--------------------------|---------------------------|-------------------|-------------------|--------|
| Sgr A* | Coordinate System | Equatorial | Convention | Radio | Sgr A* |
| | Equinox | J2000 | | Ref. Frame | |
| | Right Ascension | 17:45:40.03 00:00:00.0 | Velocity | | |
| | Declination | -29:00:28.0 00:00:00.0 | | | |

Sessions:

| Name | Session Time (hours) | Repeat | Separation | GST minimum | GST maximum | Elevation Minimum |
|--------|----------------------|--------|------------|-------------|-------------|-------------------|
| Sgr A* | 8.00 | 3 | 0 day | 14:00:00 | 22:00:00 | 0 |

Session Constraints:

| Name | Constraints | Comments |
|--------|---|----------|
| Sgr A* | Up to 3 triggered observations of 2-8 hours | |

Session Source/Resource Pairs:

| Session Name | Source | Resource | Time | Figure of Merit |
|--------------|--------|----------|----------|-----------------|
| Sgr A* | SgrA* | 7mm | 8.0 hour | 0.1 mJy/bm |