Observing Application

Date:Jan 3, 2007
Proposal ID:VLA/06C-272
Legacy ID:AU116
PI: James Ulvestad
Type:Rapid Response
Exploratory Time
Category: Extragalactic
Total time: 10.0 hour

Confirmation of Radio Emission from the Globular Cluster G1 in M31

Abstract:

The best case for a massive central black hole (BH) in a globular cluster is in the luminous cluster G1 in Andromeda. In addition to dynamical evidence for a dark object of 20,000 solar massses, there is a recent X-ray detection at the cluster center. Our long 8 GHz VLA integration (AG730, obtained in late November 2006) revealed an apparent detection of a 28 microJy radio source coincident with G1; the radio/X-ray ratio most likely confirms the existence of an intermediate-mass black hole in G1. However, the detection was handicapped by subtle problems with the EVLA antennas, still not diagnosed, that caused most of them to be discarded from the data. Here we seek an additional 10 hours of observing at 5 GHz in the current C configuration in order to confirm the source detection.

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Related proposals:
AA276,AG730

Joint:
Not a Joint Proposal

Observing type(s):
Continuum, *

Resources:

Resource name	Tele. Conf.	Frontend & Backend	Set up
Cont_C	VLA C	C Band 6 cm 4500 - 5000 MHz VLA Correlator - Single Channel Continuum	Bandwidth: 50 MHz Rest frequencies: 4885.1,4835.1 MHz

Sources:

Source name	RA / RA Range	DEC / DEC Range	System	Velocity/z	Group name
G1	00:32:46.6 00:00:00.0	+39:34:40 00:00:00	J2000	0 km/s	

Sessions:

Session Name	Session Time	Repeat	Separation	LST Minimum	LST Maximum	Elevation Minimum
G1	10.0 hours	1	0 day	19:00:00	06:00:00	8

Session Constraints:

Session Name	Constraint	Comments
G1		Total of 10 hrs needed, with 8 hrs on source. Can divide into two 5-hr segments, but prefer segments no shorter in order to reduce confusion and flux-calibration time.

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit
G1	G1/	Cont_C	10.0 hour	0.007mJy/bm

Total Time per Configuration:

Configuration	Total Time
C	10.0

Present for observation: no Staff support: None