VLA OBSERVING APPLICATION

A

rcvd:

DEADLINES: 1st of Feb., June., Oct. for next configuration following review
INSTRUCTIONS: Each numbered item must have an entry or N/A
E-MAIL TO: propsoc@nrao.edu (different for some Rapid Response Science)
OR MAIL TO: Director NRAO, 520 Edgemont Rd., Charlottesville, VA 22903-2475

(1) Date Prepared: 2005 July 28

(2) Title of Proposal: AGN Activity and the Control of Cooling Flows: the Start of Reheating in the NGC 3411 Galaxy Group

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	G/U	Students Only For Thesis?	Ph.D. Year
O'Sullivan, E.	Center for Astrophysics	eosullivan@cfa.harvard.edu			
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(4) Related VLA previous proposal number(s): N/A

(5) Contact author for scheduling: D. E. Harris
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(7) Scientific Category: ○ solar system ○ galactic ⊗ extragalactic ○ other:

Rapid Response Science: ○ Known Transient ⊗ Exploratory ○ Target of Opportunity
Joint Proposal: ○ VLA/VLBA ○ VLA/GBT ○ VLA/VLBA/GBT

(8) Configurations (one per column) (A+Pt, A, B, C, D, BnA, CnB, DnC, Any)	C				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	3.5				
(10) Time requested (hours)	3.0				

(11) Type of observation: ⊗ continuum ○ spectroscopy ○ multichannel continuum ○ polarimetry ○ solar
(check all that apply) ○ pulsar ○ high-time resolution ○ Pie Town link ○ other:

(12) Suitable for dynamic scheduling? ⊗ Suitable ○ Unsuitable

(13) ABSTRACT (do not write outside this space)

The *Chandra* and *XMM-Newton* X-ray observatories have revolutionized our view of the structure of the hot gas in groups and clusters galaxies. In particular, we are beginning to understand the important role of galaxy activity in the regulation of cooling flows. Recently obtained results from *Chandra* and *XMM* observations of NGC 3411, a X-ray bright galaxy group of relaxed appearance, agree in showing an unusual temperature profile (unique among groups and possibly so even among clusters): there is a localized and very significant rise in temperature at the group center, coincident with the dominant elliptical which hosts a 33 mJy radio source. This suggests recent onset of AGN activity and reheating of intragroup gas. In this scenario, we would expect radio evidence of the activity (small scale jets, but not yet cavities). A modest VLA integration at 8 Ghz in C array will produce high resolution maps of the source, providing essential input to the ongoing process of data interpretation, and guiding possible future proposals for lower-frequency observations to uncover evidence of earlier outburst cycles.

NRAO use only
(10/04)

(14) Observer present for observations? ○ Yes ⊗ No Data analysis at? ⊗ Home ○ AOC or CV (2 weeks notice)

(15) Help required: ⊗ None ○ Consultation ○ Friend (extensive help)

(16) Spectroscopy only	line 1	line 2	line 3	line 4
Transition (HI, OH, etc.)				
Rest Frequency (MHz)				
Velocity (km/s)				
Observing frequency (MHz)				
Correlator mode				
IF bandwidth(s) (MHz)				
Hanning smoothing (y/n)				
Number of channels per IF				
Frequency Resolution (kHz/channel)				
Rms noise (mJy/bm, nat. weight., 1 hr)				
Rms noise (K, nat. weight., 1 hr)				

(17) Number of sources:	**1**

(If more than 10 please attach list. If more than 30 give only selection criteria and LST range(s).)

(18) NAME	Coordinates 1950 ○ 2000 ⊗ RA hh mm Dec. ± xx.x°	Conf.	λ (cm)	Corr. mode	Band-width per IF (MHz)	Total Flux (Jy)*	LAS	Required rms (mJy/bm)	Required dynamic range	Time request (hr)
NCG 3411	10 50, -12.8	C	3.5		50	0.03	2′	0.015	800	3

*For spectral line, this should be the total flux at the peak of the line

Notes to the table (if any): LAS estimated from the extent of emission in the NVSS source.

(19) Restrictions to elevation (other than hardware limits) or HA range (give reason): None

(20) Preferred range of dates for scheduling (give reason): None

(21) Dates which are not acceptable: None

(22) Special hardware, software, or operating requirements: None

(23) Please attach a self-contained Scientific Justification **not in excess of 1000 words.** (Preprints or reprints will be ignored.) Please include the full addresses (postal and e-mail) for first-time users or for those that have moved (if not contact author). When your proposal is scheduled, the contents of the cover sheets become public information (Any supporting pages are for refereeing only).

v4.3 10/04