Proposal for *Chandra* Observations

Cycle 12

Cover Page

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Proposal Title X-ray follow-up of radio mini-halo candidates			
Subject Category CLUSTERS OF GALAXIES			
Proposal Type GO	**Linked Proposal** N	**Distr. Medium** WWW ONLY	**Proprietary Rights** S
Total Requested Time 180.00	**Number of Targets** 2		**Proposed Budget**

Joint Proposal?			
HST Orbits	**HST Instruments:**		
XMM Time	**Spitzer Time**	**Suzaku Time**	
NOAO Nights?	**NOAO Telescope/Instruments:**		
NRAO Hours	**NRAO Telescopes**		

Abstract

The galaxy clusters A2675 and Z808 host candidate radio mini-halos (MH), a rare class of object, and are ideal for deep Chandra follow-up. The clusters were identified from 780 other clusters for their steep spectrum radio source coincident with an optical emission line cD in a X-ray bright cluster. The radio properties are consistent with known MHs (d $>$ 200 kpc, surface brightness $<$ 1 mJy arcsec^2, alpha $<$ -1.1) and indicate in situ reacceleration of electrons. These targets have no Chandra data, multiwavelength data indicates merger activity, and the high-Lx's provide an opportunity to constrain the dynamical state of each cluster in relation to the formation/evolution of a MH. Our proposed observations will attain data sufficient to detect cold fronts, weak shocks, and faint cavities.

Proposal Number 12800362 Date: 2010-03-18

Admin. use only

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General Form

PI	Dr. Kenneth Cavagnolo
Proposal Title	X-ray follow-up of radio mini-halo candidates

Co-Investigator(s)

First Name Last Name	E-Mail Institute	Country
Alastair Edge	alastair.edge@durham.ac.uk UNIVERSITY OF DURHAM	UK
Chiara Ferrari	chiara.ferrari@oca.eu OBSERVATOIRE DE NICE	France
Stephen Hamer	s.l.hamer@durham.ac.uk UNIVERSITY OF DURHAM	UK
Brian McNamara	mcnamara@uwaterloo.ca UNIVERSITY OF WATERLOO	Canada

Are there additional Co-Is listed in the science justification? N

Is the first Co-I doing observing, rather than the PI? N **Telephone:**

Institute Endorsement

Name of Administrator	Jeff Z.Y. Chen
Administrative Authority	Chair of Physics and Astronomy
Administrative Institute	UNIVERSITY OF WATERLOO
Admin Signature:	**Date:**
PI Signature:	**Date:**

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Target Summary

PI Dr. Kenneth Cavagnolo

Proposal Title
X-ray follow-up of radio mini-halo candidates

Tar No	Target Name / Solar System Object / Grid Name / Target Description (keywords)	(J2000) R.A. Dec.	Offsets Y Detector Z Detector SIM Trans	Optical Monitor V-Mag	Observ. Time (ksec)	Detector Grating HRC Timing	(c/s) Count Rate 1st Order Total Fld.	Time-Constr? Ext.Src?	Grid #Points MaxDist.
1	RXC J2355.6+1120 (Abell 2675) NONE IMAGING; MULTIWAVELENGTH STUDY; ELLIPTICAL GALAXIES; RADIO GALAXIES; COOLING FLOWS; INTRACLUSTER MEDIUM	23 55 42.6 +11 20 35.8		N	80.0000	ACIS-S NONE N	1.659000	P N	N
2	RXC J0301.6+0155 (Zwicky 808) NONE IMAGING; MULTIWAVELENGTH STUDY; ELLIPTICAL GALAXIES; RADIO GALAXIES; COOLING FLOWS; INTRACLUSTER MEDIUM	03 01 38.0 +01 55 14.0		N	100.000	ACIS-S NONE N	1.003000	P N	N

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ACIS Parameters (Required, Pileup, Telemetry Parameters)

PI Dr. Kenneth Cavagnolo

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Tar No.	Exposure Mode / Telemetry. Format	CCDs On I0 S0	I1 S1	I2 S2	I3 S3	S4	S5	Most Eff. CCD Time	Subarray Type	StartRow No.Rows	Alternating Exposures Y/N	Nbr. Rows Exp.Time	Energy Filter Y/N	Lower Thresh. Range	Spectra Max Count	Mult. Lines
1	TE		02	01	Y	Y		Y	NONE		N		N			
	VF	N	N	Y	Y	N	N									
2	TE		02	01	Y	Y		Y	NONE		N		N			
	VF	N	N	Y	Y	N	N									

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ACIS Parameters (Custom:Telemetry Overflow Parameters)

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	Spatial Windows										
Tar No	Order	Chip	Type	Start Row	Start Col	Width	Height	Lower Threshold	Enery Range	Sample Rate	Additional Spatial Windows

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Target Constraints

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	Window Constraint			**Roll Constraints**				**Phase Dependent Observations**			
Tar No	Flag	Start Time	Stop Time	Flag	180?	Angle (degrees)	Tolerance (degrees)	Flag	Epoch(MJD) Period(days)	Min.Phase Min.Error	Max.Phase Max.Error
1	N			N	N			N			
	N			N	N						
	N			N	N						
	N			N	N						
2	N			N	N			N			
	N			N	N						
	N			N	N						
	N			N	N						

	Group Observations			**Un-interrupt?**	**Coordinated**		**Add. Constraints**
Tar No	Flag	Group ID	Interval(days)		Flag	Interval(days)	
1	N			P	N		N
2	N			P	N		N

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Monitor Observations

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Tar No	**Order**	Exp. Time (ksec)	Minimum Interval (days)	Maximum Interval (days)
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	11			
	12			
	13			
	14			
	15			
	16			
	17			
	18			
	19			
	20			

Tar No	**Order**	**Exp. Time (ksec)**	Minimum Interval (days)	Maximum Interval (days)
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	11			
	12			
	13			
	14			
	15			
	16			
	17			
	18			
	19			
	20			

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TOO Details

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Tar No	Trig-ger?	Alternates Group Name	Nbr. Req.	Response Window Type (days)	Start	Stop	Prob-ability	Initial Alloc.	**Followup Observations** Order	Exp. Time	Minimum Interval (days)	Maximum Interval (days)	Obs.Params specified by Target No.
									1				
									2				
									3				
									4				
									5				
									6				
									7				
									8				

TOO Trigger Criteria

TOO Followup Instructions

If this TOO is a resubmission of a proposal approved in the previous Cycle, should this TOO be canceled if the previous Cycle TOO is triggered?

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Target Remarks

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Tar No	Remarks Coordinated Observation: Observatories