Proposal for *Chandra* Observations

Cycle 06

Cover Page

Principal Investigator Prof Mark Birkinshaw		
Department/Mailstop HH Wills Physics Laboratory		
Institute University of Bristol		
Address / Street Tyndall Avenue		**City / Town** Bristol
State / Province	**Zip / Postal Code** BS8 1TL	**Country** UK
Telephone +44-117-9288775	**Fax** +44-117-9255624	
E-Mail Address: mark.birkinshaw@bristol.ac.uk		

Proposal Title The multi-faceted X-ray activity of a complete sample of low-redshift galaxies			
Subject Category ACTIVE GALAXIES AND QUASARS			
Proposal Type LP	**Linked Proposal** N	**Distr. Medium** WWW ONLY	**Proprietary Rights** S
Total Time 680.00		**Number of Targets** 17	**Proposed Budget**

Joint Proposal? HST		
XMM Time	**RXTE Time**	
HST Orbits 8	**HST Instruments:** ACS/WFC, ACS/HRC	
NOAO Nights?	**NOAO Telescope/Instruments:**	
NRAO/VLA Hours	**NRAO/VLA Array**	**NRAO/VLA Wavelength**
NRAO/VLBA Hours	**NRAO/VLBA Wavelength**	

Abstract

We propose Chandra observations of those members of the low-redshift 3CRR sample of active galaxies for which no observations already exist. The current incompleteness of the Chandra archive risks introducing bias into statistical studies of active galaxies. With 40-ks ACIS exposures we will detect cores, jets, hot spots, and atmospheres, and use them to investigate particle acceleration in jets, the interactions of jets with the interstellar medium, the emission mechanisms of hot spots, and the fueling of AGNs. A few missing observations with HST are requested to assist in the interpretation of these data. The legacy of this program will be a permanent high-quality AGN dataset for the community.

Proposal Number 6700647 Date: 2004-03-12 Admin. use only

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General Form

PI	Prof Mark Birkinshaw
Proposal Title	The multi-faceted X-ray activity of a complete sample of low-redshift galaxies

Co-Investigator(s)

First Name Last Name	E-Mail Institute	Country
Diana Worrall	dworrall@cfa.harvard.edu SAO	USA
Ralph Kraft	rkraft@cfa.harvard.edu SAO	USA
Martin Hardcastle	m.hardcastle@bristol.ac.uk University of Bristol	UK
Eric Perlman	perlman@jca.umbc.edu University of Maryland, Baltimore County	USA

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	Prof. J.W. Steeds
Administrative Authority	Head, Department of Physics
Administrative Institute	University of Bristol
Admin Signature:	**Date:**

PI Signature: **Date:**

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Target Summary

PI
Prof Mark Birkinshaw
Proposal Title
The multi-faceted X-ray activity of a complete sample of low-redshift galaxies

Tar No	Target Name Solar System Object Target Description (keywords)	**(J2000)** R.A. Dec.	**Offsets** Y Detector Z Detector SIM Trans	Optical Monitor V-Mag	Observ. Time (ksec)	Detector Grating	**(c/s)** Count Rate 1st Order Total Fld.	Time-Constr? Ext.Src?	**HRC** Timing Mode
1	3C 386 NONE Radio Galaxies	18 38 26.3 +17 11 49.7		N	40.0000	ACIS-S NONE	0.019000	P Y	N
2	NGC 7385 NONE Radio Galaxies	22 49 54.7 +11 36 30.1		N	40.0000	ACIS-S NONE	0.074000	P Y	
3	3C 442A NONE Radio Galaxies	22 14 46.9 +13 50 24.0		N	40.0000	ACIS-S NONE	0.115000	P Y	N
4	3C 98 NONE Radio Galaxies	03 58 54.4 +10 26 03.0		N	40.0000	ACIS-S NONE	0.008000	P Y	N
5	3C 76.1 NONE Radio Galaxies	03 03 15.0 +16 26 19.0		N	40.0000	ACIS-S NONE	0.029000	P Y	N
6	DA 240 NONE Radio Galaxies	07 48 36.9 +55 48 58.3		N	40.0000	ACIS-S NONE	0.020000	P Y	N
7	3C 305 NONE Radio Galaxies	14 49 21.7 +63 16 14.0		N	40.0000	ACIS-S NONE	0.009000	P Y	N
8	3C 293 NONE Radio Galaxies	13 52 17.8 +31 26 46.5		N	40.0000	ACIS-S NONE	0.003000	P Y	N

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Tar No	Target Name Solar System Object Target Description (keywords)	(J2000) R.A. Dec.	Offsets Y Detector Z Detector SIM Trans	Optical Monitor V-Mag	Observ. Time (ksec)	Detector Grating	(c/s) Count Rate 1st Order Total Fld.	Time-Constr? Ext.Src?	HRC Timing Mode
9	3C 310 NONE Radio Galaxies	15 04 57.1 +26 00 58.3		N	40.0000	ACIS-S NONE	0.121000	P Y	N
10	4C 73.08 NONE Radio Galaxies	09 49 46.0 +73 14 23.1		N	40.0000	ACIS-S NONE	0.010000	P Y	
11	3C 33 NONE Radio Galaxies	01 08 50.6 +13 18 31.4		N	40.0000	ACIS-S NONE	0.013000	P Y	N
12	3C 192 NONE Radio Galaxies	08 05 35.0 +24 09 50.0		N	40.0000	ACIS-S NONE	0.004000	P Y	N
13	3C 35 NONE Radio Galaxies	01 12 02.2 +49 28 35.0		N	40.0000	ACIS-S NONE	0.021000	P Y	N
14	3C 285 NONE Radio Galaxies	13 21 17.8 +42 35 15.3		N	40.0000	ACIS-S NONE	0.026000	P Y	N
15	1227+119 NONE Radio Galaxies	12 29 52.3 +11 40 38.9		N	40.0000	ACIS-S NONE	0.031000	P Y	N
16	3C 326 NONE Radio Galaxies	15 52 09.2 +20 05 23.7		N	40.0000	ACIS-S NONE	0.002000	P Y	N

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Tar No	Target Name / Solar System Object / Target Description (keywords)	(J2000) R.A. / Dec.	Offsets Y Detector / Z Detector / SIM Trans	Optical Monitor / V-Mag	Observ. Time (ksec)	Detector / Grating	(c/s) Count Rate 1st Order / Total Fld.	Time-Constr? / Ext.Src?	HRC Timing Mode
17	3C 236	10 06 01.7		N	40.0000	ACIS-S	0.003000	P	N
	NONE	+34 54 10.4				NONE		Y	
	Radio Galaxies								

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ACIS Parameters (Required, Pileup, Telemetry Parameters)

PI
Prof Mark Birkinshaw

Proposal Title
The multi-faceted X-ray activity of a complete sample of low-redshift galaxies

Tar No.	Exp. Mode / Telem. Format	Std. Chips	CCDs On I0 / S0	I1 / S1	I2 / S2	I3 / S3	S4	S5	Most Efficient CCD Time	Subarray Type	Subarray Start Row / No.Rows	Alternating Exp. Y/N	Alternating Exp. Nbr. Rows / Exp.Time	Energy Filter Y/N	Energy Filter Lower Thrsh. / Energy Range	Use Spatial Windows
1	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
2	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
3	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
4	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
5	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
6	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
7	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
8	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
9	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
10	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
11	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
12	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
13	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
14	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
15	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N
16	TE VF	N			Y Y	Y Y			Y	NONE		N		Y	0.1000 13.000	N

Proposal for *Chandra* Observations

Cycle 06

ACIS Parameters (Required, Pileup, Telemetry Parameters)

PI
Prof Mark Birkinshaw
Proposal Title
The multi-faceted X-ray activity of a complete sample of low-redshift galaxies

Tar No.	Exp. Mode / Telem. Format	Std. Chips	CCDs On: I0 I1 I2 I3 / S0 S1 S2 S3 S4 S5	Most Efficient CCD Time	Subarray Type	Subarray Start Row / No.Rows	Alternating Exp. Y/N	Alternating Exp. Nbr. Rows / Exp.Time	Energy Filter Y/N	Energy Filter Lower Thrsh. / Energy Range	Use Spatial Windows
17	TE / VF	N	I2 I3: Y Y / S2 S3: Y Y	Y	NONE		N		Y	0.1000 / 13.000	N

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ACIS Parameters (Custom:Telemetry Overflow Parameters)

PI Prof Mark Birkinshaw
Proposal Title The multi-faceted X-ray activity of a complete sample of low-redshift galaxies

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

(Columns Or-der through Sample Rate are grouped under **Spatial Windows**.)

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Target Constraints

PI	Prof Mark Birkinshaw
Proposal Title	The multi-faceted X-ray activity of a complete sample of low-redshift galaxies

Tar No	Window Constraint Flag	Start Time	Stop Time	Roll Constraints Flag	180?	Angle	Tolerance	Phase Dependent Observations Flag	Epoch(MJD) Period(days)	Min.Phase Min.Error	Max.Phase Max.Error
1	N			P	Y	250.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
2	N			P	Y	240.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
3	N			P	Y	215.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
4	N			P	Y	245.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
5	N			P	Y	140.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
6	N			P	Y	210.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						

Tar No	Monitoring Observations Flag	No.	Geometric Factor	Interval (days)	Tolerance	Group Observations Flag	Group ID	Interval (days)	Uninterrupt?	Multi-Telescope	Add. Constraints
1	N	1	1.000			N			P	N	N
2	N	1	1.000			N			P	N	N
3	N	1	1.000			N			P	N	N
4	N	1	1.000			N			P	N	N
5	N	1	1.000			N			P	N	N
6	N	1	1.000			N			P	N	N

Proposal for *Chandra* Observations **Cycle 06**

Target Constraints

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Tar No	Window Constraint Flag	Start Time	Stop Time	Roll Constraints Flag	180?	Angle	Tolerance	Phase Dependent Observations Flag	Epoch(MJD) Period(days)	Min.Phase Min.Error	Max.Phase Max.Error
7	N			P	Y	225.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
8	N			P	Y	140.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
9	N			P	Y	110.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
10	N			P	Y	195.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
11	N			P	Y	255.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
12	N			P	Y	145.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						

Tar No	Monitoring Observations Flag	No.	Geometric Factor	Interval (days)	Tolerance	Group Observations Flag	Group ID	Interval (days)	Un-inter rupt?	Multi-Tele-scope	Add. Con-straints
7	N	1	1.000			N			P	N	N
8	N	1	1.000			N			P	N	N
9	N	1	1.000			N			P	N	N
10	N	1	1.000			N			P	N	N
11	N	1	1.000			N			P	N	N
12	N	1	1.000			N			P	N	N

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Tar No	Window Constraint Flag	Start Time	Stop Time	Roll Constraints Flag	180?	Angle	Tolerance	Phase Dependent Observations Flag	Epoch(MJD) Period(days)	Min.Phase Min.Error	Max.Phase Max.Error
13	N			P	Y	260.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
14	N			P	Y	190.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
15	N			P	Y	150.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
16	N			P	Y	200.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						
17	N			P	Y	145.0000	70.00000	N			
	N			N	N						
	N			N	N						
	N			N	N						

Tar No	Monitoring Observations Flag	No.	Geometric Factor	Interval (days)	Tolerance	Group Observations Flag	Group ID	Interval (days)	Uninterrupt?	Multi-Telescope	Add. Constraints
13	N	1	1.000			N			P	N	N
14	N	1	1.000			N			P	N	N
15	N	1	1.000			N			P	N	N
16	N	1	1.000			N			P	N	N
17	N	1	1.000			N			P	N	N

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TOO Details

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	Response Window					Followup Observations			
Tar No	Type (days)	Start	Stop	Initial Alloc.	Prob-ability	Obs. Time	Interval (days)	Toler.	TOO Trigger

TOO Followup Instructions

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Target Remarks

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Tar No	Remarks Multi-Telescope: Observatories