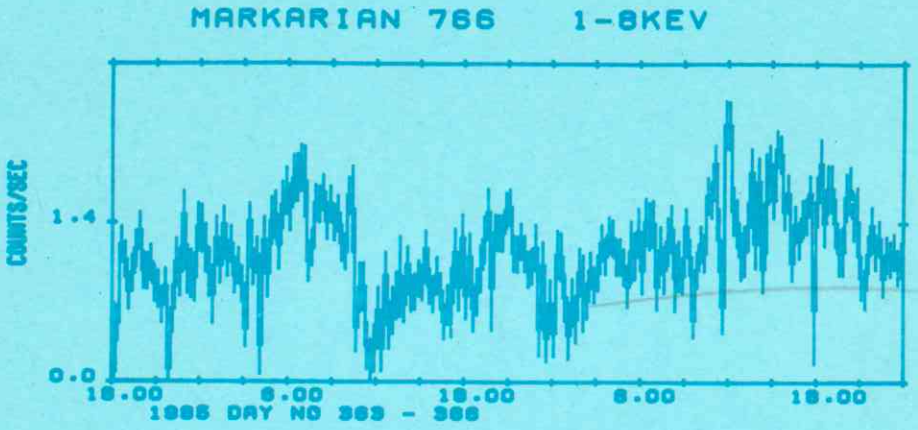
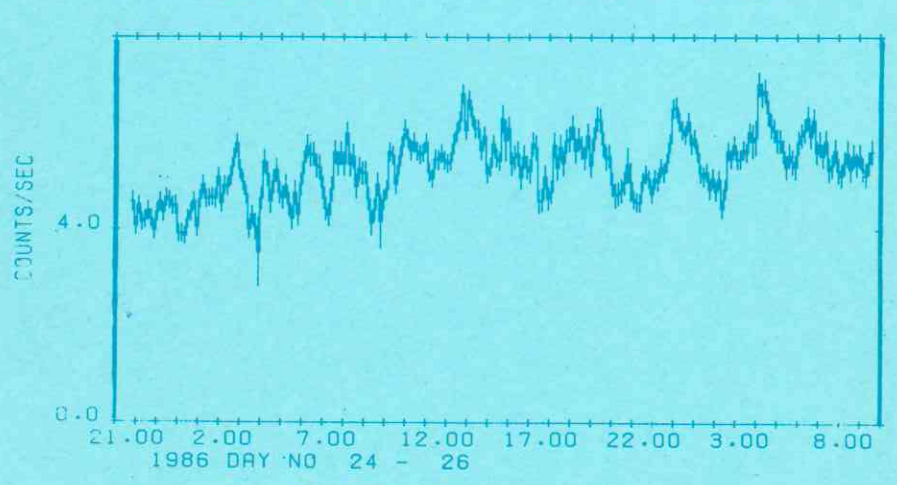
exosat esa

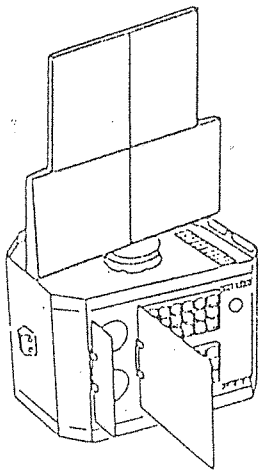
EXOSAT EXPRESS



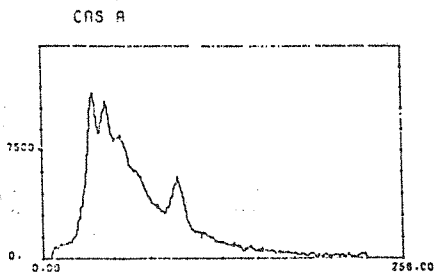


EXOSAT
EUROPEAN X-RAY ASTRONOMY SATELLITE

No. 15 February 1986



EXOSAT EXPRESS



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NO. 15 FEBRUARY 1986

Front Cover

Background-subtracted medium-energy light curves of the Seyfert 1 galaxy Markarian 766 (upper) and the Seyfert 2 galaxy NGC 5506 (lower) showing dramatic recurrent variability on a timescale of 1 to 2 hours.

Courtesy: P. Barr, I. McHardy

FOREWORD

Selection of a 6 month AO-4 programme of EXOSAT observations was carried out by the Committee on Observation Proposal Selection (COPS) at their meeting on 18th and 19th February in ESTEC. This AO elicited from the astronomical community 277 proposals requesting 4829 units (932 pointings) of observation time, an oversubscription by approximately a factor of 7. 104 proposals were recommended as the AO-4 observation programme, requiring 685 units of observation time at 177 separate pointings. These pointings have been separated into priority 1, 2 and 3 targets (ref. Express No. 14, p.44).

Attention is drawn to the discussion on p.2 concerning a recent anomaly in the functioning of the spacecraft reaction control equipment (RCE) and consequent uncertainty over both the remaining natural mission lifetime and the capability to carry out 'delta-V' manoeuvres. Although fuel estimates continue to indicate a mission termination in mid-summer or late autumn according to the thermal gauging and logging estimates of 1.5 kg or 2.5 kg respectively of propane remaining on 28.2.86, the planned orbit manoeuvres on 1st and 8th March 1986 have been delayed.

A decision was taken to institute a priority programme of the approved observations during March and April and an attempt was made (unsuccessfully on 3/3) to position the 1000 l/mm transmission grating correctly in the X-ray beam of the LE1 telescope, to allow some important grating observations towards the end of the mission. Note that the grating is firmly stuck in a position outside the X-ray beam of LE1.

Plans for EXOSAT's post operational phase, approved by the Science Programme Committee are given on pp. 37 to 41. Current vacancies within ESA's Space Science Department are advertised on p. 50 and readers are kindly asked to display copies or bring them to the attention of suitable candidates.

After an 11-year association with EXOSAT, from the payload scientific model development through to the last phase of the operational life, the Editor will be leaving the programme in April and would like to take this opportunity to express his pleasure in working throughout this time with colleagues at the Observatory, in ESOC, ESTEC, industry and within the X-ray community and to wish them continuing success with the remaining operations of EXOSAT, future data analysis and research.

EXOSAT EXPRESS

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OBSERVATORY STATUS AS OF 28.2.86

In the light of the spacecraft hardware anomaly described below, the strategy for orbit perigee raising to extend the mission lifetime is under review particularly with respect to the capability of the RCE1 system to maintain stability during the thrust and possible use of the redundant RCE2 system, despite its known 'thruster-on' failures (ref. Express No.4, p.34 and Express No.9 p.3). Note that complete failure of the RCE1 plenum valve would require immediate action to ensure the safety of the satellite and procedures have been defined for this event. Furthermore, additional software and operational procedures are under definition and development to support mission operations with RCE2, although doubts remain about the feasibility.

Because of the above uncertainty over mission duration, and capability of extension, and the importance of carrying out priority AO-4 observations, the observation programme for March and April 1986 has been completely revised in order to maximise the science output during the remaining phase of the mission. Outstanding AO-3, AO-2 and AO-1 observations (ref. pp. 7/8) together with the remainder of the AO-4 programme will be scheduled as and when the mission profile permits. Inevitably, and regrettably, a number of approved observations may not be carried out.

1. Hardware.

Readers are reminded (Express No.9 p.4) that following the X-gyro malfunction in January 1985 an OBC program was implemented to monitor the status of a number of sun presence indicators and the rate of pressure decrease in the plenum chamber of the RCE in order to avoid spurious triggering of safety mode by the unstable Y-gyro health status monitor. Note that the RCE consists of two redundant parts, RCE1 and RCE2, served by a common propane tank (for mass distribution reasons in fact two tanks permanently coupled) with separate plenum chambers and valves. On day 44 (1986), the plenum pressure in RCE1 failed for the first time to reach the demand value of 0.72 Bar and subsequent tests indicated a severely reduced gas flow rate through the valve and a delay between commanding the valve open and onset of gas flow. From the available data it has not so far proved possible to distinguish between a continuing or a 'step-function' degradation in performance of the valve. Operations can, however, still be carried out normally and measures have been implemented to reduce the frequency of valve commanding and hence to minimise further degradation.

2. Performance and Operation

Improved star tracker calibration data have been in use since 30.7.85 (ref. Express No.12 p.2). All previous pointings from launch to 30.7.85 have been re-analysed with the new calibration data to give a set of corrected pointings for each observation. These will be included in a future re-analysis of all EXOSAT data, but in the meantime observers primarily interested in positional accuracy should contact the Observatory. Note that in the majority of cases, the difference in pointing is not significant.

Uncertainties in the fine sun sensor (FSS) calibration - see Express No.14 p.2 - are under investigation and will be corrected systematically in the re-analysis exercise. Where positional accuracy is the prime interest for an observation with the FSS used for control, P.I's should again contact the Observatory for the most accurate pointing data.

There has been only a minor impact on operations from the malfunction of the RCE1 plenum valve (Section 1) and no impact on performance during stable pointing and manoeuvres, although the options for orbit modification are severely affected.

Solar activity has caused minor loss of observation time on several occasions, however, a huge solar 'proton' event on 6/2 (0918 Z) prevented scientific operations between 6/2 and 9/2 (days 37-40). P.I's with observations immediately following this period are advised that a reduction in average background count rates of about 20-25% was observed.

3. Observation Output

The Observation Log (ref. Express No.9 p.44) has recently been updated to include all observations performed to the end of 1985 and printed copies of the log with chronological or RA-ordered listings of the observations can be obtained on request from the Observatory. Software to access the log is under development with the intention of providing a remote-access 'browsing' facility. Note that an earlier copy of the log, complete up to January 1985, is available for distribution (quoting reference V/49/) from the Centre de Données Stellaires at Strasbourg.

Now that the EXOSAT Bibliography has become rather extensive, future issues of the Express will list only additions during the previous period and the complete bibliography will be established on a computer file with access provided as for the observation log.

Attention is drawn to the archive release list on p. 46. Since the establishment of the procedure for requesting archive data, some 200 tapes have been authorised for release.

4. Future Plans

For the remainder of the operational phase, the EXOSAT Express will continue to be published bi-monthly. In the post-operational phase (ref. p. 37), the frequency of publication will reduce gradually from 4 issues/year to 2 issues/year.

As the end of the mission approaches consideration is being given to the re-analysis, after an operational 'wind-down' period, of all EXOSAT data as a pre-requisite to the establishment of the results data base and final catalogues. Details will be given in a future issue of the Express.

LIST OF AO-3 OBSERVATIONS 1.1.86 - 28.2.86

Day (86)	Time	Target	RA	Dec	SAA	Duration h m	Principal Investigator	
001	23.56	2S0114+650	01 14 24	+65 59 58	113	9 39	Swank	
002	11.57	VW Cep	20 38 10	+75 22 36	98	14 58	Vilhu	
003	06.20	M33	01 30 54	+30 22 20	109	14 35	Gottwald	
004	00.45	H0323+022	02 23 33	+02 12 37	124	7 14	Bradt	
004	11.54	NGC 1851	05 12 29	-40 08 21	112	11 56	Auriere	
005	11.54	Pictor A	05 18 26	-45 51 58	107	17 36	Reichert	
006	10.25	3C 66A	02 19 22	+42 46 06	118	5 5	Maccagni	
006	18.40	A00235+164	02 35 49	+16 21 28	116	3 20	McHardy	
007	02.00	H0323+022	03 23 36	+03 23 36	121	6 30	Bradt	
007	12.54	H1028-568	10 28 47	-56 48 42	90	10 34	Tuohy	
008	02.20	PG1144+005	11 44 11	+00 30 37	110	7 47	Barstow	
008	13.35	CW1103+254	11 02 58	+25 22 36	128	5 55	Beuermann	
009	10.30	PG1211+143	12 11 55	+14 20 52	110	11 49	Elvis	
010	00.10	NGC 4593	12 37 16	-05 05 29	98	25 50	Clavel	
011	03.25	IRAS1249-131	12 49 46	-13 07 50	93	6 7	Ward	
011	13.00	PSR1055-52	10 56 08	-52 11 05	93	13 29	Brinkmann	AO-1
012	04.55	NGC 1566	04 18 51	-55 06 20	92	3 20	Alloin	
013	01.15	H0449-55	04 52 33	-55 58 45	95	9 14	Serlemitsos	
013	12.10	EXO 0748-676	07 48 42	-67 38 54	90	17 26	TOO	
014	09.57	3A1219+305	12 18 59	+30 28 36	117	12 8	McHardy	
015	02.40	KPD-005+5106	00 05 37	+51 03 54	92	6 27	Barstow	
015	10.47	3C66A	02 19 22	+42 46 32	110	6 32	Maccagni	
015	20.05	A00235+164	02 35 48	+16 21 59	106	3 12	McHardy	
016	04.25	NGC1630	03 31 03	-26 04 28	101	7 31	Claas	
017	03.20	LMC X-4	05 32 54	-66 26 39	88	11 31	Pietsch	
017	18.34	3C273	12 26 42	+02 20 39	111	39 35	Turner	
019	12.55	NGC5548	14 15 53	+25 23 16	95	17 28	De Korte	AO-2
021	04.10	HD36705	05 28 42	-65 31 44	89	9 14	Collier	AO-2
021	15.40	3A0557-383	05 56 22	-38 22 30	113	8 54	Pounds	AO-2
022	03.30	G293.8+0.6	11 33 23	-60 36 03	90	6 4	Smith	
022	12.05	A1644	12 55 09	-18 11 19	101	8 54	Stewart	
023	01.00	Feige 91	14 07 08	+59 01 15	108	6 4	Paerels	
023	10.25	SV Cam	06 29 32	+82 19 29	116	3 15	Eyles	
023	17.10	1E0236+6100	02 37 01	+60 55 01	108	14 50	Bignami	
024	13.40	NGC5506	14 10 49	-02 57 10	92	75 29	McHardy	
028	07.45	PG1211+143	12 11 53	+14 21 13	129	12 50	Elvis	
028	23.21	MCG6-30-15	13 33 14	-34 01 37	93	50 38	Pounds	AO-2
031	07.20	3C120	04 30 25	+05 12 42	114	6 55	Tanzi	
032	02.30	A00235+164	02 35 49	+16 31 29	90	4 10	McHardy	
032	08.12	3C66A	02 19 25	+42 45 53	95	11 12	Maccagni	
032	23.55	1E1617+173	16 17 09	+17 38 24	77	2 45	Giommi	
033	09.08	HR1099	03 34 09	+00 22 58	98	46 48	White	
036	02.25	Per Flasher	03 10 28	+32 02 29	98	5 38	TOO	
036	13.39	PG1416-129	14 16 30	-12 56 13	99	5 40	Elvis	
040	02.00	MCG 8-11-11	05 50 54	+46 25 09	125	7 20	Maraschi	
040	12.25	V471 Tau	03 47 25	+17 04 25	98	24 41	Jensen	
041	15.20	A0535+26	05 35 37	+26 15 47	123	10 5	Stella	AO-2

Day (86)	Time	Target	RA	Dec	SAA	Duration h m	Principal Investigator	
042	04.20	V1005 Ori	04 56 51	+01 40 34	110	5 8	Shafer	
042	10.38	H0407-04	04 09 19	-03 57 24	96	6 28	Nousek	
042	19.29	4U0352+30	03 52 05	+30 52 07	100	2 49	Robba	
043	07.15	4U0352+30	03 52 06	+30 51 37	99	13 2	Robba	
043	23.15	4U0614+09	06 14 15	+09 06 59	128	14 12	Corbet	
044	15.02	3C 120	04 30 23	+05 12 32	102	5 58	Tanzi	
044	23.10	4U0352+30	03 52 06	+30 51 37	97	5 50	Robba	
045	08.33	AG Dra	16 01 51	+66 56 49	100	5 50	Cordova	
045	17.45	V471 Tau	03 47 28	+17 04 05	93	18 40	Jensen	
046	15.53	LMC X-4	05 32 36	-66 27 03	87	1 0	Pietsch	
047	05.49	WD 1615-154	16 15 15	-15 26 39	82	3 42	Shipman	
047	11.10	1E1617+173	16 17 09	+17 38 23	89	10 10	Giommi	
048	02.31	AKN 120	05 13 30	-00 13 44	108	8 29	Barr	
048	14.10	Crab	05 31 27	+21 56 45	115	12 2	Calibration	
049	05.00	A0535+26	05 35 40	+26 15 51	115	6 24	Stella	
049	15.10	A496	04 29 54	-13 17 44	93	8 3	Stewart	
050	00.48	IRAS 0521-12	05 21 42	-12 14 30	105	7 12	Ward	
050	10.55	LMC X-4	05 32 37	-66 26 10	87	25 0	Pietsch	
051	22.25	SS 38	12 48 51	-64 43 54	98	5 56	Frontera	
052	06.56	SC1326-31	13 22 14	-31 06 25	118	10 24	Stewart	
052	19.50	Cen X-4	14 55 33	-31 26 42	101	2 54	Verbunt	
053	00.15	NGC 5824	15 01 04	-32 50 10	100	13 15	Verbunt	
053	16.50	MKN 841	15 01 47	+10 39 57	111	5 17	Tennant	
053	23.59	1E1617+173	16 18 08	+17 58 39	94	5 53	Giommi	
054	21.00	1E1617+173	16 18 07	+17 58 40	94	7 31	Giommi	
055	05.48	H1615+09	16 14 18	+09 28 36	94	4 42	Basri	AO-2
055	12.37	A2142	15 56 23	+27 23 36	101	8 23	Stewart	
056	00.05	MKN 290	15 35 01	+58 06 03	105	6 56	Pounds	
056	11.35	Cir X-1	15 17 06	-56 57 40	92	23 11	Tennant	AO-4
057	16.40	MCG 8-11-11	05 50 55	+46 24 24	109	8 59	Maraschi	
059	01.14	Vela SNR	08 53 00	-45 19 00	121	2 49	Smith	AO-1
059	08.00	Cir X-1	15 16 07	-57 12 09	94	20 57	Tennant	AO-4
060	09.28	NGC 4151	12 08 01	+34 41 33	143	34 18	Barr	

OUTSTANDING AO-1/AO-2 POINTINGS

AO-1 (8)

Target	Proposal No.	Comments
SC 0627-54	CLU F10	To be scheduled
3C345	AGN F50	TOO Status waiting for outburst
GX340+0	OCC G1	Occultation - on hold
GX349+2	OCC G4	" "
GX339-4	HLX F17	To be scheduled
MKN 376	AGN F34	To be rescheduled
MKN 79	AGN F34	" "
G18.95-1.1	SNR F3	" "

AO-2 (22)

Target	Proposal No.	Comments
Decided by PI	AGN 024	
NGC 1808	AGN 057	To be scheduled
Abell 2235	CLU 006	" "
3A1006+475	MIS 011	" "
G41.1-0.3	SNR 030	" "
G39.9+0.0	SNR 041	" "
AO538-66	HLX 053	TOO Status (5 observations)
AM Her	HLX 063	To be scheduled
AO535+26	HLX 154	Partially complete
RCW 86	SNR 039	Partially complete;To be scheduled
NGC 5548	AGN 124	To be scheduled
Moon	MIS 027	3(?) Observations
Sco X-1	HLX 071	Scheduled Mar. 86 (AO2 extension)
Ar Lac	LLX 135	AO-2 extension - To be scheduled

OUTSTANDING AO-3 POINTINGS

Observation time for the following proposals is still outstanding

SNR	MIS	CLU
SNR3-002	MIS3-004	CLU3-002
SNR3-003	MIS3-007	CLU3-008
SNR3-016	MIS3-008	CLU3-015
SNR3-021	MIS3-026	CLU3-016
SNR3-024		CLU3-021
SNR3-030		
SNR3-033		
SNR3-043		
SNR3-044		

HLX	LLX	AGN
HLX3-003	LLX3-001	AGN3-011
HLX3-012	LLX3-013	AGN3-013
HLX3-014	LLX3-017	AGN3-014
HLX3-015	LLX3-029	AGN3-023
HLX3-017	LLX3-033	AGN3-032
HLX3-019	LLX3-035	AGN3-034
HLX3-020	LLX3-046	AGN3-035
HLX3-021	LLX3-049	AGN3-041
HLX3-027	LLX3-059	AGN3-044
HLX3-029	LLX3-064	AGN3-047
HLX3-032	LLX3-077	AGN3-048
HLX3-033	LLX3-078	AGN3-050
HLX3-042	LLX3-080	AGN3-055
HLX3-047	LLX3-083	AGN3-066
HLX3-048	LLX3-084	AGN3-068
HLX3-049	LLX3-085	AGN3-070
HLX3-061	LLX3-086	AGN3-081
HLX3-062	LLX3-091	AGN3-089
HLX3-075	LLX3-098	
HLX3-076	LLX3-099	
HLX3-079	LLX3-102	
HLX3-086	LLX3-107	
HLX3-090	LLX3-108	
HLX3-094	LLX3-114	
HLX3-120	LLX3-119	
HLX3-121	LLX3-124	
HLX3-123	LLX3-135	
HLX3-125	LLX3-141	
HLX3-126		

EXOSAT X-RAY SOURCES

'New' X-ray sources are discovered by EXOSAT serendipitously in the FOV of the telescope or in the offset quadrants of the ME or from an analysis of ME/GSPC 'background' data recorded during manoeuvres. We intend to maintain a list of published 'new' sources and readers are encouraged to report 'discoveries'.

EXOSAT Source Nomenclature

Source Position: RA 02H 30m 20.5s (1950)
DEC -02D 20m 33.2s

Name : EXO 023020-0220.5

EXO 074824-6737.4:	IAU Telegram No. 4039
EXO 184639-0307.5:	IAU Telegram No. 4051
EXO 174725-2124.7:	IAU Telegram No. 4058
EXO 203021+3727.9:	IAU Telegram No. 4066
EXO 063111+1801.9:	IAU Telegram No. 4081
EXO 041604-5504.9:	IAU Telegram No. 4097
EXO 125653+2809.9:	Space Science Reviews, 40, 1985, 648. (and M.N.R.A.S. (1985),216, p.1043-1055)
EXO 125757+2840.3:	" " "
EXO 125905+2807.0:	" " "
EXO 125921+2828.2:	" " "
EXO 125938+2803.1:	" " "
EXO 020528+1454.8:	IAU Telegram No. 4172
EXO 115842-0323.8	Private Communication (M. Barstow - Leicester)

IAU (EXOSAT) TELEGRAMS

Circular No.	Title	Comment	Authors
1983			
3841	Hercules X-1	Anomalous X-ray behaviour	EXOSAT Team
3842	Supernova in NGC 5236	Multi-waveband observations	W. Wamsteker
3850	GK Persei	351s periodicity during an outburst	M. Watson, A. Smith EXOSAT Team
3854	MXB 1730-335	Active, type 1 bursts	G. Pollard, N. White P. Barr, L. Stella
3858	4U 1543-45	Accurate position, ultra-soft spectrum	R. Blissett, EXOSAT Team
3872	GX 1+4	Unexpected low X-ray state: $\leq$ 4 UFU	R. Hall, J. Davelaar EXOSAT Team
3882	4U1755-33	Periodic dips in intensity	N. White, A. Parmar K. Mason
3887	4U2129+47 = V1727 Cygni	Unexpected low X-ray and optical state	W. Pietsch, H. Steinle M. Gottwald
3893	V0332+53	Accurate position, and flux	J. Davelaar, R. Blissett, L. Stella M. McKay, N. White, J. Bleeker
3902	V0332+53	Discovery of 4.4s period	L. Stella, N. White
1984			
3906	V0332+53	Unexpected brightening	A.N. Parmar R.J. Blissett T. Courvoisier L. Chiappetti
3912	V0332+53	Orbital parameters determination	N. White, J.Davelaar, A.N. Parmar, L. Stella M. van der Klis

Circular No.	Title	Comment	Authors
3923	Her X-1	Her X-1 'on' again at 80 Uhuru flux units, 1.24s pulsations (March 1.5 - 1.8)	J. Trümper, P. Kahabka H. Ögelmann, W. Pietsch, W. Voges, M. Gottwald, A. Parmar
3932	2S1254-690	Discovery of type 1 Burst and an absorption 'event'.	T. J.-L. Courvoisier, A. Peacock, M. Pakull
3935	AN URSAE MAJORIS	Serendipitous observation: soft X-ray flux suggests a return to the 'bright' state.	J.P. Osborne
3939	VW HYDRI	Discovery of X-ray pulsations during superoutburst	J. Heise, F. Paerels, H. van der Woerd
3952	2S1254-690	Discovery of a 3.9hr period in the X-ray light curve	T. J.-L. Courvoisier A. Parmar, A. Peacock
3961	4U1323-62	Type 1 Burst discovered	M. van der Klis, F.A. Jansen, J. van Paradijs, W.H.G. Lewin
3980	TV Columbae	X-ray periodicity discovered in range 1-7 keV.	A.C. Brinkman, J. Schrijver
3996	2S 0142+61	1456 sec Modulation of the X-ray flux	N.E. White, P. Giommi, A.N. Parmar, F.E. Marshall
1985			
4033	1E1402.3+0416	Rapid variability in BL Lac Objects.	P. Giommi, P. Barr
4038	PG0834-488	Detection of a hard X-ray flux	M.C. Cook
4039	EXO 0748-676	Discovery of a bright transient X-ray source which shows bursts, irregular intensity dips and periodic total eclipses	A.N. Parmar, N.E. White, P. Giommi F. Haberl.
4043	GX 5-1	Quasi periodic oscillation in the 1-10 keV flux	M. van der Klis, F. Jansen, J. van Paradijs, W. Lewin, J. Trümper, M. Sztajno
4044	4U 1323-62	Periodic dips in the 1-10 keV flux	M. van der Klis, A. Parmar, J. van Paradijs, F. Jansen, W. Lewin

Circular No	Title	Comment	Authors
4044	NGC 3031	Flux increases and variablity in the 0.1-6 keV range	P. Barr, P. Giommi
4049	RS OPHIUCHI	Intense X-ray emission detected; spectrum soft & absorbed.	F.A. Cordova, K.O. Mason, M.F. Bode, P. Barr
4051	EXO 1846-031	Detection of a new bright X-ray transient; non-variable flux .2 Crab.	A.N. Parmar, N.E.White
4051	4U1624-49	Periodic intensity dips discovered in the 2-10 keV flux.	M.G. Watson, R. Willingale, R. King I.E. Grindlay, J. Halpern
4054	NGC 4051	Quasi-periodic flux variations observed.	A. Lawrence, M. Elvis K. Pounds, M. Watson
4057	EXO 0748-676	Still active at 0.01 Crab - 21 type I bursts in total.	A.N. Parmar, M. Gottwald, F.Haberl N.E. White
4058	EXO 1747-214	New transient X-ray source Intensity 0.07 Crab, Type I bursts seen.	A.N. Parmar, N.E.White P. Giommi, L. Stella M. Sweeney
4060	SCO X-1	Quasi-periodic fast variability between 4 and 9 Hz during quiescent state.	J. Middleditch, W. Priedhorsky
4065	Nova Vul 1984 No. 2	Detected at 3σ level in 0.04-2 keV range soon after outburst.	J. Krautter, H. Ögelman,
4066	EXO 2030+375	Discovery of a bright, uncatalogued, transient X-ray pulsar period 41.83s.	A.N. Parmar, L. Stella P. Ferri, N.E. White
4068	SCO X-1	Intensity dependent quasi-periodic oscillations in 5-35 KeV data.	M. van der Klis, F. Jansen, N. White, L. Stella, A. Peacock
4070	CYG X-2	Intensity dependent quasi-periodic oscillations in 1-10 KeV flux.	G. Hasinger, A. Langmeier, M. Sztajno, N. White,
4081	EXO 063111+ 1801.9	Improved position of an Einstein serendipitous source - tentative optical counterpart	G.F. Bignami, P.A. Caraveo, L. Salotti, G.G.C. Palumbo
4082	AG-DRA	Detection of X-ray emission at minimum phase.	L. Piro, A. Cassatella L. Spinoglio, R.Viotti A. Altamore

Circular No	Title	Comment	Authors
4083	R. AQ	Weak X-ray emission at maximum suggests non-correlation with MIRA-type variations.	R. Viotti, L. Piro, M. Friedjung, A.Cassatella
4083	1E1048.1-5937	X-ray pulsations with a period 6.44s; power law spectrum, high obscuration.	A.P. Smale, P. Charles R.H.D. Corbet, F.D. Seward.
4096	BR CIRCINI	Extreme high-state flux ($>$ 3 Crab) observed	A.F. Tennant, R. Shafer
4097	EXO 041604-5504.9	Discovery of a new soft X-ray source; X-ray flux variable, 70% changes on a timescale of 1 month. Possible optical counter-part - A5 type star.	D. Alloin, D. Pelat, S. D'Odorico
4101	GX349+2	Low frequency noise and possible quasi-periodic oscillations detected in the average power spectra of the fluctuations in the X-ray flux.	W.H.G. Lewin, J. van Paradijs, F. Jansen, M. van der Klis, J. Trümper, M. Sztajno
4102	GX17+2	Discovery of quasi-periodic oscillations at an average frequency of 7.2 Hz.	L. Stella, A.N.Parmar, N.E. White
4102	V741 TAU	Soft X-ray pulsations with period of 554.79s discovered.	K.A. Jensen
4110	MXB1730-335	40 Type II flat-topped bursts detected in a 16 hr observation Quasi-periodic oscillations observed in some of the bursts.	L. Stella, A.N. Parmar N.E. White, W.H.G. Lewin, J. van Paradijs
4111	4U1705-44	14 Type I X-ray bursts detected	M. Sztajno, J. Frank J. Trümper, G.Hasinger W. Pietsch, J. van Paradijs.
4112	EXO 2030+375	Intensity of X-ray flux shows almost linear decay from 700 mCrab on 19/5 to 35 mCrab on 10/7. Pulse period decreased rapidly, consistent with pulsar in an eccentric orbit	N.E. White, P. Ferri, A.N. Parmar, L. Stella
4116	GX 349+2	Confirmation of existence of quasi-periodic oscillations (4101)	B.A. Cooke, L. Stella, T. Ponman

Circular No	Title	Comment	Authors
4117	4U1820-30	Quasi-periodic oscillations disocvered in high (400-500 mCrab) non-bursting state.	L. Stella, N. White, W. Priedhorsky
4131	γ-Cas	Strong time variability detected consistent with source flux modulation of period 6000±200s.	D. Dal Fiume, F. Frontera, E. Manzo, S. Re, R. Robba
4140	GX5-1	Correlation between spectral state (hard/soft) and presence/absence of QPO.	M. van der Klis, F. Jansen, J. van Paradijs, W. Lewin, J. Trümper, M. Sztajno
4147	GX17+2	QPO's observed with centroid frequency of 2.4 Hz at a flux of $\sim 1.4 \times 10^{-11}$ J/m^2/s.	A.Langmeier, G.Hasinger, M. Sztajno J. Trümper, W. Pietsch
4153	V1341 Cyg	Evidence of two types of QPO's intensity-dependent hard spectrum between 18 and 42 Hz and, in the active state, soft, intensity-independent at 5.64 Hz.	G. Hasinger, A. Langmeier, M. Sztajno, W. Pietsch, M. Gottwald
1986			
4169	R AQU	Results indicate X-ray emission originates in the circumstellar region of a hot companion and not from the MIRA giant.	R. Viotti, L. Rossi, A. Cassatella, L. Piro
4170	GX3+1	Detection of quasi-periodic oscillations and low-frequency noise at a flux level of $\sim 1.2 \times 10^{-11}$ Jm^{-2}s^{-1}. No obvious relation between presence of QPO and spectral hardness.	W.H.G. Lewin, J. van Paradijs, G. Hasinger W.H. Penninx, M. van der Klis, F. Jansen, A. Langmeier, M. Sztajno, J. Trümper
4172	EXO 020528 + 1454.8	Discovery of a new, soft X-ray source during 1985 Aug. 20.7 - 21.1 UT. No source observed at this position 2 & 6 Dec. 1983 and Jan 18 1985, suggesting a transient or highly variable	R. Hudec, W. Wanzel

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This list of recent EXOSAT preprints refers to all papers, with an Observatory Team member as author, which have been accepted for publication. Once the paper is published in the literature, it will be removed from this list.

10. An EXOSAT Observation of Quiescent and Flare Coronal X-ray Emission from Algol.
    White, N.E., Culhane, J.L., Parmar, A.N. Kellett, B.J., Kahn, S., van den Oord, G.H.J., Kuijpers, J.

12. The Evolution of the 1984 Outburst of the Transient X-ray Source 4U 1630-47.
    Parmar, A.N., Stella, L., White, N.E.

15. The Orbital Periods of the Low Mass X-ray Binaries.
    White, N.E.

16. X-rays from the Magnetic White Dwarf PG 1658+441.
    Pravdo, S.H., Marshall, F.E., White, N.E. Giommi, P.

17. Rapid X-ray and Optical Variability in the X-ray selected BL Lac object 1E1402.3+0416.
    Giommi, P., Barr, P., Gioia, I.M., Maccacaro, T., Schild, R., Garilli, B., Maccagni, D.

18. The Discovery of 3.8 hour Periodic Intensity Dips and Eclipses from the Transient Low Mass X-ray Binary EXO 0748-676.
    Parmar, A.N., White, N.E., Giommi, P. Gottwald, M.

19. The Bursting Behaviour of the Transient X-ray Burst Source EXO 0748-676: A Dependence between the X-ray Burst Properties and the Strength of the Persistent Emission.
    Gottwald, M., Haberl, F. Parmar, A.N., White, N.E.

20. Uncorrelated Soft and Hard X-ray Short Term Variations from Am Her.
    Stella, L., Beuermann, K., Patterson, J.

21. The limits of X-ray variability in Active Galactic Nuclei.
    Barr, P. Mushotzky, R.F.

22. Intermittent Stellar Wind Accretion and the Long Term Activity of the Pop.I Binary Systems containing an X-ray Pulsar.
    Stella, L., White, N.E., Rosner, R.

25. Quasi-periodic oscillations in bright galactic X-ray sources: Preliminary Results from recent EXOSAT observations
    Stella, L.

Copies of these preprints are available on request to the Observatory Secretary.

EXOSAT BIBLIOGRAPHY

Hardware

Pre-Launch

A simple method of obtaining high background rejection in large area proportional counters. Bailey, T.A., Smith, A., and Turner, M.J.L. Nucl. Instrum. and Methods 115, 177 (1978).

Efficiency and resolution measurements of gratings between 7.1 and 304 Angstroms. Brinkman, A.C., Dijkstra, J.H., Geerlings, W.F.P.A.L., van Rooijen, F.A., Timmermann, C., and de Korte, P.A.J. Appl. Opt. 19, 1601 (1980).

X-ray scattering from epoxy replica surfaces. de Korte, P.A.J. SPIE Proceedings Space Optics - Imaging X-ray Optics Workshop 184, 189 (1979).

The X-ray imaging telescopes on EXOSAT. de Korte, P.A.J., Bleeker, J.A.M., den Boggende, A.J.F., Branduardi-Raymont, G., Brinkman, A.C., Culhane, J.L., Gronenschild, E.H.B.M., Mason, I. and McKechnie, S.P. Space.Sci.Rev. 30, 495 (1981).

X-ray imaging telescope on EXOSAT. Lainé, R., Giralt, R., Zobl, R., de Korte, P.A.J., and Bleeker, J.A.M. SPIE Proceedings Space Optics - Imaging X-ray Optics Workshop 184, 181 (1979).

The gas scintillation proportional counter on EXOSAT. Peacock,A., Andresen, R.D., Manzo, G., Taylor, B.G., Re, S., Ives, J.C., and Kellock, S. Space.Sci.Rev. 30, 525 (1981).

The parallel-plate imaging proportional counter and its performance with different gas mixtures. Sanford, P.W., Mason, I.M., Dimmock, K. and Ives, J.C. IEEE Trans.Nucl.Sci., NS-26 (1) 169 (1979).

The EXOSAT Mision. Taylor, B.G., Andresen, R.D., Peacock, A. and Zobl, R. Space.Sci.Rev. 30, 479 (1981).

The Medium Energy Instrument on EXOSAT. Turner, M.J.L., Smith,A., and Zimmermann, H.U. Space.Sci.Rev. 30, 513 (1981).

Post-Launch

The in-orbit performance of the EXOSAT Gas Scintillation Proportional Counter. Peacock, A., Taylor, B.G., White, N.E., Courvoisier, T., Manzo, G. IEEE Trans. Nucl. Sci., Vol. NS-32, No. 1, 1985.

The EXOSAT imaging X-ray detectors. Mason, I.M., Branduardi-Raymont, G., Culhane, J.L., Corbet, R.H.D., Sanford, P. IEEE Trans. Nucl. Sci., Vol. NS-31, No. 1, 1984.

The suppression of destructive sparks in parallel plate proportional counters. Cockshott, R.A., Mason, I.M. IEEE Trans. Nucl. Sci., NS-31, No. 1, 1984.

High Luminosity X-ray sources (HLX)

Spectral and temporal features in bursts from 2S1636-536 observed with EXOSAT. Turner, M.J.L. and Breedon, L.M. M.N.R.A.S. (1984), 208, 29p.

Evidence for 4.4 hour periodic dips in the X-ray flux from 4U1755-33. White, N.E., Parmar, A.N., Sztajno, M., Zimmermann, H.U., Mason, K.O., Kahn, S.M. Ap.J., 238, L9-12, 1984.

An extended X-ray low state from Hercules X-1. Parmar, A.N., Pietsch, W., McKechnie, S., White, N.E., Trümper,J. Voges, W., Barr, P. Nature 313 (1985), 119.

The Discovery of 4.4 second X-ray pulsations from the rapidly variable X-ray transient V0332+53. Stella, L., White, N.E. Davelaar, J., Parmar, A.N., Blissett, R.J., and van der Klis, M. Ap.J., 288, L45-49 (1985).

Transient quasi-periodic oscillations in the X-ray flux of Cygnus X-3. Van der Klis, M., Jansen, F.A. Nature 313 (1985), p.768-770.

Evidence for variation in the phase-dependent ionisation structure of the stellar wind in VELA X-1. Van der Klis, M., Hammerschlag-Hensberg, G. Proc. 4th European IUE Conference 15-18 May 1985, Rome. ESA SP(218), 443.

Spectral Studies of Low Mass X-ray Binaries Observed by EXOSAT. Sztanjno, M., Trümper, J,. & Langmeier, A. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.111.

Discovery of Regularities in the Cycle-to-Cycle Variability of Cygnus X-3. van der Klis, M., Jansen, F. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.115.

EXOSAT Observation of 4U1705-44. Langmeier, A., Sztajno, M., & Trümper, J. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.121.

EXOSAT Observations of 1636-536. Breedon, L.M., Turner, M.J.L. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.145.

Recent Results of EXOSAT observations of 2S1254-690. Courvoisier, T. J.-L., Parmar, A.N., Peacock, A. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.153.

Pulse Phase Spectroscopy of Her X-1 with EXOSAT. Kahabka, P., Pietsch, W., Trümper, J., Voges, W., Kendziorra, E., and Staubert, R. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.193.

EXOSAT Observations of the 35 days Intensity Variations of Her X-1. Oegelman, H., Kahabka, P., Pietsch., W., Trümper, W., Voges, W., Kendziorra, E, & Staubert, R. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.197.

EXOSAT Observations of 3A1954+319. Cook, M.C., Warwick, R.S., and Watson, M.G. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.225.

EXOSAT Observations of the X-ray Transient V0332+53. Davelaar,J., White, N.E., Parmar, A.N., Blissett, R.J., van der Klis, M., and Schrijver, H. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.235.

Observations of LMC X-3 with EXOSAT. Treves, A., Bonnet-Bidaud, J.M., Chiappetti, L., Maraschi, L., Stella, L., Tanzi, E.G., and van der Klis, M. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.259.

EXOSAT Observations of the Andromeda Nebula. McKechnie, S.P., Jansen, F.A., de Korte, P.A.J., Hulscher, F.W.H., van der Klis,M. Bleeker, J.A.M., and Mason, K.O. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.373.

X-ray observation of VELA-X. Smith, A., Zimmermann, H.U., Adv. Space Res., Vol. 5 No. 3, p.33, 1985.

Is Cygnus X-3 a low-mass X-ray binary? Van der Klis, M., Jansen, F. Adv. Space Res., Vol. 5, No. 3, p.109, 1985.

EXOSAT observation of the galactic bulge X-ray source GX17+2. Sztajno, M., Trümper, J., Zimmermann, H.U., Langmeier, A. Adv. Space Res., Vol. 5, No. 3, p.121, 1985.

Optical and X-ray observations of 4U2129+47/V1727 Cyg in a quiescent state. Pietsch, W., Steinle, N., Gottwald, M. Adv. Space Res., Vol. 5, No. 3, p.117, 1985.

Search for millisecond rotational periods in some low-mass X-ray binaries observed by EXOSAT. Langmeier, A., Sztajno, M., Trümper, J. Adv. Space Res., Vol. 5, No. 3, p.121, 1985.

Cygnus X-3: The dependence of the Iron-line parameters on orbital phase. van der Klis, M. Proc. Japan-US Seminar on Galactic and Extragalactic compact X-ray sources. Tokyo, 1985. p.195.

EXOSAT MEDA obsevations of Cyg X-3. Willingale, R., King, A.R., Pounds, K. M.N.R.A.S. (1985) 215, 295-314.

EXO 0748-676: An exciting new X-ray transient. Parmar, A.N., Gottwald, M., Haberl, F., Giommi, P. and White, N.E., Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.119.

The spectral and temporal variability of GX 13+1. Stella, L., White, N.E., and Taylor, B.G. Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.125.

EXOSAT Observations of the X-ray source in the Globular Cluster Terzan 2. Belli, B.M., D'Antona, F., Molteni, D., and Morini, M. Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.263.

Intensity-dependent quasi-periodic oscillations in the X-ray flux of GX5-1. Van der Klis, M., Jansen, F., Van Paradijs, J., Lewin, W.H.G., van den Heuvel, E.P.J., Trümper, J.E., Sztajno, M. Nature, 316, (1985), p.225.

The Big Dipper: 4U1624-49. Watson, M.G., Willingale, R., King, A.R., Grindlay, J.E. and Halpern, J. Space Science Reviews, 40 (1985), Nos. 1-4, p.195.

Spectral Variability of Scorpius X-1, as observed with EXOSAT. Brinkman, A.C., Mewe, R., Langerwerf, T., Heise, J., Peacock,A. and White, N. Space Science Reviews, 40 (1985), Nos. 1-4, p.201.

High and Medium Resolution Spectroscopy of the X-ray Transient 4U1543-47. Chiappetti, L., White, N.E., Kahn, S.M., and Shafer,R. Space Science Reviews, 40 (1985), Nos. 1-4, p.207.

An Investigation into the Nature of the 4.4 hr Periodic Source 4U1755-33. Parmar, A.N., White, N.E., Sztajno, M. and Mason, K.O. Space Science Reviews, 40 (1985), Nos. 1-4, p.213.

An EXOSAT Observation of the peculiar X-ray Binary 2S 0921-630 during optical eclipse. Mason, K.O., Cordova, F.A., Corbet, R.H.D. and Branduardi-Raymont, G. Space Science Reviews, 40 (1985), Nos. 1-4, p.225.

EXOSAT medium energy observations of Cyg X-2. Hasinger, G., Langmeier, A., Pietsch, W. and Sztajno, M. Space Science Reviews, 40 (1985), Nos. 1-4, p.233.

Co-ordinated Optical-EXOSAT-Tenma observations of a Burst from 2S1636-536. Turner, M.J.L., Breedon, L.M., Ohashi, T., Courvoisier, T., Inoue, H., Matsuoka, M., Pederson, H., van Paradjis, J. and Lewin, W.H.G. Space Science Reviews, 40 (1985), Nos. 1-4, p.249.

EXOSAT and Optical observations of the X-ray Burst Source 4U/MXB1636-53. Trümper, J., Van Paradijs, J., Sztajno, M., Lewin, W.H.G., Pietsch, W., Krautter, J., Stollman, G., and van der Klis, M. Space Science Reviews, 40 (1985), Nos. 1-4, p.255.

EXOSAT observations of Bursts from 2S1636-536: Burst Morphology. Turner, M.J.L., Breedon, L.M. and Ohashi, T. Space Science Reviews, 40 (1985), Nos. 1-4, p.263.

The Quiescent Spectrum of 2S1636-536. Breedon, L.M., Turner, M.J.L., King, A., and Courvoisier, T. Space Science Reviews, 40 (1985), Nos. 1-4, p.269.

EXOSAT results on the X-ray Burster 2S1254-690. Courvoisier, T., Parmar, A.N., Peacock, A. Space Science Reviews, 40 (1985), Nos. 1-4, p.275.

Coordinated EXOSAT and Optical observations of the X-ray Burster 4U1735-44. Smale, A.P., Corbet, R.H.D., Charles, P.A., Menzies, J.W. and Mack, P. Space Science Reviews, 40 (1985), Nos. 1-4, p.281.

First detection of an X-ray Burst from a one hour intensity dip in 4U1323-62. van der Klis, M., Jansen, F., van Paradijs, J. and Stollmann G. Space Science Reviews, 40 (1985), Nos. 1-4, p.287.

Detection of Iron Lines in the persistent emission of some X-ray Burst sources observed by EXOSAT. Sztajno, M., Trümper, J., Hasinger, G. and Langmeier, A. Space Science Reviews, 40 (1985), Nos. 1-4, p.293.

The Variable Iron Line in Cygnus X-3. van der Klis, M., Peacock, A. Smith, A., White, N.E., Mason, K. and Manzo, G. Space Science Reviews, 40 (1985), Nos. 1-4, p.297.

Temporal intensity fluctuations of Her X-1 around 100 sec time-scales. Voges, W., Kahabka, P., Ögelman, H., Pietsch, W. and Trümper, J. Space Science Reviews, 40 (1985), Nos. 1-4, p.339.

35 day cycle and the rotation period of Her X-1. Ögelman, H., Kahabka, P., Pietsch, W., Trümper, J., and Voges, W. Space Science Reviews, 40 (1985), Nos. 1-4, p.347.

EXOSAT Observations of the iron line emission of Her X-1 during a 35 day cycle. Kahabka, P., Ögelman, H., Pietsch, W., Trümper, J. and Voges, W. Space Science Reviews, 40 (1985), Nos. 1-4, p.355.

Spectra and time variability of GX 5-1. Kendziorra, E., Collmar, W., Brunner, H., Staubert, R. and Pietsch, W. Space Science Reviews, 40 (1985), Nos. 1-4, p.361.

EXOSAT observations of the Bright X-ray source GX9+1. Langmeier, A., Sztajno, M., Trümper, J. and Hasinger, G. Space Science Reviews, 40 (1985), Nos. 1-4, p.367.

LMC X-4: 13.5 pulsations and an X-ray flare observed by EXOSAT. Pietsch, W., Pakull, M., Voges, W. and Staubert, R. Space Science Reviews, 40 (1985), Nos. 1-4, p.371.

LMC X-4, A0538-66 and surrounding X-ray sources observed with EXOSAT. Pakull, M., Brunner, H., Pietsch, W., Staubert, A., Beuermann, K., van der Klis, M. and Bonnet-Bidaud, J.M. Space Science Reviews, 40 (1985), Nos. 1-4, p.379.

The discovery of low-level iron line emission from Cyg X-1. Barr, P., White, N.E., and Page, C. Space Science Reviews, 40 (1985), Nos. 1-4, p.383.

Study of rapid variability in Cygnus X-1. Page, C.G. Space Science Reviews, 40 (1985), Nos. 1-4, p.387.

The spectral and temporal variability of the X-ray Transient 4U1630-47. Parmar, A.N., Stella, L. and White, N.E. Space Science Reviews, 40 (1985), Nos. 1-4, p.391.

EXOSAT observations of the X-ray Pulsar 4U1145-619. Warwick, R.S. Watson, M.G. and Willingale, R. Space Science Reviews, 40 (1985), Nos. 1-4, p.429.

A high quality low state observation of Cir X-1. Tennant, A.F. Space Science Reviews, 40 (1985), Nos. 1-4, p.433.

A new view of the Galactic Plane with EXOSAT. Turner, M.J.L., Warwick, R.S., Watson, M.G. and Willingale, R. Space Science Reviews, 40 (1985), Nos. 1-4, p.437.

EXOSAT observations of broad Iron K line emission from Sco X-1. White, N.E., Peacock, A., Taylor, B.G. Ap.J. 296, 475-480(1985).

The Discovery of low-level iron K line emission from Cyg X-1. Barr, P., White, N.E., Page, C.G. M.N.R.A.S. (1985), 216, 65-70p.

Simultaneous X-ray and Optical observations of the X-ray dip source X1755-338. Mason, K.O., Parmar, A.N., White, N.E. M.N.R.A.S. (1985), 216, 1033-1041.

The Galactic Ridge observed by EXOSAT. Warwick, R.S., Turner, M.J.L., Watson, M.G., Willingale, R. Nature 317, (1985), p.218.

EXOSAT CMA observations of X0512-401 = NGC 1851. Ercan, E.N., Kiziloglu, U., Esendemir, A., Tokdemir, F., Branduardi-Raymont,G. Proc. ESA Workshop: Cosmic X-ray Spectroscopy Mission, Lyngby, Denmark. ESA SP-239, 1985.

Accreting Neutron Stars in Close Binary Systems. Ilovaisky, S.A. Proc. ESA Workshop: Cosmic X-ray Spectroscopy Mission, Lyngby, Denmark, ESA SP-239-1985.

Optical UV and X-ray Observations of X-ray binaries. Bianchi, L. Pakull, M. Proc. ESA Workshop: Cosmic X-ray Spectroscopy Mission, Lyngby, Denmark, ESA SP-239-1985.

* Unusual X-ray burst profiles from 4U/MXB 1636-53. Sztajno, M., van Paradijs, J., Lewin, W.H.G., Trümper, J., Stollman, G., Pietsch, W., van der Klis M. Ap.J., 299, 487-495 (1985).

* Quasi-periodic oscillations in the X-ray flux of Cyg X-2. Hasinger, G., Langmeier, A., Sztajno, M., Trümper, J., Lewin, W.H.G., White, N.E. Nature (1986), 319, p.469.

* A Study of the continuum and iron K-line emission from low-mass X-ray binaries. White, N.E., Peacock, A., Hasinger, G., Mason, K.O., Manzo, G., Taylor, B.G., Branduardi-Raymont, G. M.N.R.A.S. (1986), 218, 129-138.

* EXOSAT measurements of the quiescent X-ray spectrum of the burster 2S1636-536; evidence for Comptonisation in a hot corona. Breedon, L.M., Turner, M.J.L., King, A.R., Courvoisier, T. J.-L. M.N.R.A.S. (1986), 218, 487-496.

* Timing analysis of the Galactic Bulge X-ray source GX17+2. Langmeier, A. Sztajno, M., Vacca, W.D., Trümper, J., Pietsch, W. 1986. Proc. Conference on the Evolution of Galactic X-ray Binaries, Tegernsee, June 1985 p.253-259. Eds. J. Trümper, W.H.G. Lewin and W. Brinkmann, Reidel publication).

Low Luminosity X-ray sources (LLX)

EXOSAT Observation of the candidate X-ray counterpart of Geminga. Caraveo, P.A., Bignami, G.F., Giommi, P., Mereghetti, S., and Paul, J.A. Nature 310, 481-483 (1984).

EXOSAT Observations of H2215-086: detection of the X-ray pulse period. Cook, M.C., Watson, M.G., McHardy, I.M. M.N.R.A.S (1984), 210, 7p.

Further Evidence on the Increasing One Minute Period in the X-ray Data of Geminga (1E0630+178). Bignami, G.F., Caraveo, P.A., and Salotti, L. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.209.

EXOSAT Observation of "Geminga". Caraveo, P., Bignami, G.F., and Mereghetti, S. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984, p.213.

The detection of X-rays from Nova Muscae 1983 with the EXOSAT Satellite. Ögelman, H., Beuermann, K., Krautter, J., Ap.J., 287, L31-34, 1984.

EXOSAT soft X-ray Observations of EX HYDRAE. Cordova, F.A., Mason, K.O., Kahn, S.M. M.N.R.A.S. (1985), 212, 447-461.

An X-ray corona in SS Cygni. King, A.R., Watson, M.G., Heise, J. Nature 313 (1985), p.290-291.

The old Nova GK Per: discovery of the X-ray pulse period. Watson, M.G., King, A.R., Osborne, J. M.N.R.A.S. (1985), 212, 917-930.

Preliminary results of co-ordinated optical UV and X-ray observations of magnetic white dwarfs in binaries. Maraschi, L., Beuermann, K., Bonnet-Bidaud, J.M., Charles, P.A., Chiappetti, L. Hammerschlag, G., Howarth, I., Motch, C., Mouchet, M., Osborne,J. Stella, L., Treves, A., Van Paradijs, J., Willis, A.J., Wilson,R. Proc. 4th European IUE Conference 15-18 May 1985, Rome. ESA SP(218), 427.

EXOSAT hard X-ray observations of EX Hydrae. Beuermann, K., and Osborne, J. Proceedings, Int. Symposium on X-ray Astronomy, Bologna, 1984. p.23.

X-ray observations of the AM Her Star CW1103+254. Beuermann, K., Stella, L., and Krautter, J. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.27.

EXOSAT Observations of late-type stars: Preliminary Results. Landini, M., Monsignori-Fossi, B.C., and Pallavicini, R. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.31.

X-ray Emission from the Planetary Nebulae NGC 1360. de Korte, P.A.J., Claas, J.J., Jansen, F.A., McKechnie, S.P. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.35.

The soft X-ray superoutburst of VW Hydri: 14 second periodicity. van der Woerd, H., Heise, J., and Paerels, F. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.55.

EXOSAT Observations of Am Her objects: Preliminars Results. Osborne, J., Maraschi, L., Beuermann, K., Bonnet-Bidaud, J.M., Charles, P.A., Chiappetti, L., Motch, C., Mouchet, M., Tanzi, E.G., Treves, A., and Mason, K.O. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.59.

EXOSAT observations of Intermediate Polars: Preliminary Results. Osborne, J., Mason, K.O., Bonnet-Bidaud, J.M., Beuermann, K., and Rosen, S. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.63.

Simultaneous EXOSAT and optical observations of the pulsing X-ray binary H2252-035/AO Psc. Pietsch, W., Pakull, M., Tjemkes, S., Voges, W., Kendziorra, E., and van Paradijs, J. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.67.

X-ray emission from the planetary nebula NGC 1360. de Korte, P.A.J., Claas, J.J., Jansen, F.A., McKechnie, S.P. Adv. Space Res., Vol. 5, No. 3, p.57, 1985.

Soft X-ray characteristics of White Dwarfs observed by EXOSAT. Heise, J., Bleeker, J.A.M., Brinkman, A.C., Gronenschild, E., Paerels, F., Grewing., M., Wulf-Mathies, C., Beuermann, K. Adv. Space Res., Vol. 5., No. 3, p.61, 1985.

Spectral and temporal studies of various late-type stars. Brinkman, A.C., Gronenschild, E., Mewe, R., McHardy, I., Pye, J.P. Adv. Space Res., Vol. 5, No. 3, p.65, 1985.

A simultaneous X-ray and radio observation of a flare from ALGOL. Parmar, A.N., Culhane, J.L., White, N.E., van den Oord, G.H.J. Adv. Space Res., Vol. 5, No. 3, p.65, 1985.

A search for X-ray emitting coronal structures in ALGOL. Culhane, J.L., White, N.E., Kahn, S., Parmar, A.N., Blisset, R.J., Kellett, B. Adv. SPace Res., Vol. 5, No. 3, p.73, 1985.

Einstein and EXOSAT observations of Geminga (1E0630+1748). A summary of the short- and medium-term variability data. Bignami, G.F., Caraveo, P.A., Mereghetti, S., Salotti, L. Adv. Space Res., Vol. 5, No. 3, p.145, 1985.

The identification of H2311+77 with HD220140: A probable RS CVn. Pravdo, S., White, N.E., Giommi, P. M.N.R.A.S. (1985), 215, 118.

Orbital and fast variability of the AM Her System H1405-45 in the X-ray and Optical ranges. Bonnet-Bidaud, J.M., Beuermann, K., Charles, P., Maraschi, L., Motch, C., Mouchet, M., Osborne, J., Tanzi, E. and Treves. A. Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.155.

X-ray optical and UV observations of the AM Her object E2003+225. Osborne, J.P., Mukai, K. Bonnet-Bidaud, J.M., Charles, P., Corbet, R., Henry, P., Hill, G., Kahn, S., van der Klis, M., Maraschi, L., Treves, A., and Vrtilek, S. Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.161.

EF Eri: Structure of the X-ray light curve. Watson, M.G., King, A.R., Williams, G., Heise, J., Beuermann, K. Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.169.

Geometry and Magnetic field of the AM Her star H0139-68. Schwope, A. and Beuermann, K. Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.173.

X-ray observations of classical novae during the outburst stage by EXOSAT. Ögelman, H., Beuermann, K., Krautter, J. Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.177.

Multi-frequency observations of Dwarf Novae - outbursts. Skzody, P. Proc. ESA Workshop. Recent results on Catacylsmic Variables, Bamberg 17-19 April 1985 (ESA SP-236, June 1985) p.

X-ray emission from the catacylsmic variable PG 0834+488. Cook, M.C. M.N.R.A.S. (1985), 215, 81p-84p.

An X-ray study of AM Herculis I Discovery of a new mode of soft X-ray emission. Heise, J., Brinkman, A.C., Gronenschild, E., Watson, M., King, A.R., Stella, L., Keiboom, K. Astronomy & Astrophys. 148, L14-16 (1985).

Magnetic Activity in Cool Stars. Schrijver, C.J. Space Science Reviews, 40 (1985), Nos. 1-4, p.3.

An EXOSAT observation of the morphology of the coronal X-ray emission from Algol. White, N.E., Culhane, J.L., Parmar, A.N., Kellett, B., Kahn, S., van den Oord, G.H.J. and Kuijpers, J. Space Science Reviews, 40 (1985), Nos. 1-4, p.25.

Observation of an X-ray outburst and quiescent emission from the RS CVn binary HR1099. Barstow, M.A. Space Science Reviews, 40 (1985), Nos. 1-4, p.35.

EXOSAT observations of late-type stars: The application of Coronal Loop Models. Landini, M., Monsignori-Fossi, B.C. and Pallavicini, R. Space Science Reviews, 40 (1985), Nos. 1-4, p.43.

X-ray observations of Active Chromosphere Stars. Bedford, D.K., Elliott, K.H. and Eyles, C.J. Space Science Reviews, 40 (1985), Nos. 1-4, p.51.

EXOSAT observation of the compact binary VW Cephei. Vilhu, O. and Heise, J. Space Science Reviews, 40 (1985), Nos. 1-4, p.55.

The extremely X-ray bright Wolf-Rayet star HD193793. Pollock, A.M.T. Space Science Reviews, 40 (1985), Nos. 1-4, p.63.

EXOSAT observations of M Dwarfs. Schmitt, J.H.M.M. and Sztajno,M. Space Science Reviews, 40 (1985), Nos. 1-4, p.69.

EXOSAT observations of active stellar coronae in the Cygnus Loop, T Tau & NGC 2264 regions. Charles, P.A., Corbet, R.H.D., Mukai, K., Smale, A.P., Kahn, S.M., Kuhi, L.V. and Brown, A. Space Science Reviews, 40 (1985), Nos. 1-4, p.73.

X-ray emission from isolated hot white dwarfs. Heise, J. Space Science Reviews, 40 (1985), Nos. 1-4, p.79.

X-ray and optical variability at the hour timescale for 1E 0630+178 (Geminga) and its proposed optical counterpart. Vigroux, L., Paul, J.A., Delache, P., Bignami, G.F., Caraveo, P.A. and Salotti, L. Space Science Reviews, 40 (1985), Nos. 1-4, p.91.

X-ray emission from Catacylsmic Variables. Mason, K.O. Space Science Reviews, 40 (1985), Nos. 1-4, p.99.

Hard X-ray observations of the eclipsing binary EX Hydrae. Beuermann, K. and Osborne, J. Space Science Reviews, 40 (1985), Nos. 1-4, p.117.

2A 0526-328: The White Dwarf rotation period revealed. Schrijver, J., Brinkman, A.C., van der Woerd, H., Watson, M.G., King, A.R., van Paradijs, J. and van der Klis, M. Space Science Reviews, 40 (1985), Nos. 1-4, p.121.

SS Cygni in outburst and quiescence. Watson, M.G., King, A.R. and Heise, J. Space Science Reviews, 40 (1985), Nos. 1-4, p.127.

EXOSAT/Opticial observations of the AM Her star H0139-68. Beuermann, K., Schwope, A., Weissieker, H. and Motch, C. Space Science Reviews, 40 (1985), Nos. 1-4, p.135.

X-ray variability of the AM Her star CW1103+254. Beuermann, K. and Stella, L. Space Science Reviews, 40 (1985), Nos. 1-4, p.139.

New EXOSAT results from the intermediate polar V1223 Sgr. Osborne, J., Rosen, R., Mason, K.O. and Beuermann, K. Space Science Reviews, 40 (1985), Nos. 1-4, p.143.

X-ray, optical & UV observations of the AM Her system E2003+225. Mukai, K., Bonnet-Bidaud, J.M., Bowyer, S., Charles, P.A., Chiappetti, L., Clarke, J.T., Corbet, R.H.D., Henry, J.P., Hill, G.J., van der Klis, M., van Paradijs, J. and Vrtilek, S.D. Space Science Reviews, 40 (1985), Nos. 1-4, p.151.

X-ray and optical observations of Nova Muscae 1983 during its Nebular stage. Krautter, J., Beuermann, K. and Ögelman, H. Space Science Reviews, 40 (1985), Nos. 1-4, p.156.

The discovery of a 25 min regular modulation in the X-ray flux from 2S0142+61. White, N.E., Giommi, P., Parmar, A.N., Marshall, F.E. and Mason, K.O. Space Science Reviews, 40 (1985), Nos. 1-4, p.157.

The decay of Dwarf Nova outbursts. van der Woerd, H. and Heise,J. Space Science Reviews, 40 (1985), Nos. 1-4, p.163.

A model for the outburst of Nova RS Ophiuchi in 1985. Bode,M.F., Kahn, F.D. M.N.R.A.S. (1985), 217, 205-216.

SW UMa and V426 Oph: EXOSAT Surprises. Szkody, P. Proc. 9th N. American Workshop on Cataclysmic Variables, 1985, 132-136.

The X-ray spectrum of emission line stars (superluminous and symbiotic). Baratha, G.B., Piro, L., Viotti, R., Cassatella, A., Altmore, A., Ricciardi, O., Friedjung, M. Proc. ESA Workshop: Cosmic X-ray Spectroscopy Mission, Lyngby, Denmark. ESA SP-239, 1985 p.95.

The Hyades: EXOSAT Broad Band spectroscopy. Proc. ESA Workshop: Cosmic X-ray Spectroscopy Mission, Lyngby, Denmark. ESA SP-239, 1985 p.159.

* EXOSAT observation of flare stars and coronal heating. Butler, C.J., Rodono, M. Irish Astronomical Journal, 17, No.2 (1985).

* Some implication of excess soft X-ray emission from Seyfert 1 galaxies. Fabian, A.C., Guilbert, P.W., Arnaud, K.A., Shafer, R.A., Tennant, A.F., Ward, M.J. M.N.R.A.S.(1986), 218, p457-464.

* Simultaneous optical and X-ray observations of a flare on BY Draconis. de Jager, C., Heise, J., Avgoloupis, S., Cutispoto, G. Kieboom, K., Herr, R.B., Landini, M., Langerweff, A.F., Mavridis, L.N., Melkonian, A.S., Molenaar, R., Monsignori-Fossi, B.C., Nations, H.L., Pallavicini, R., Piirola, V., Rodono, M., Seeds, M.A., van den Oord, G.H.J., Vilhu, O., Waelkens, C. Astron. & Astrophys. 156 (1986), p.95.

* The soft X-ray Superoutburst of VW Hydri. van der Woerd, H., Heise, J., Bateson, F. Astron. & Astrophys. 156, 1986, p.252.

Active Galactic Nuclei (AGN)

EXOSAT Observations of Active Galactic Nuclei. Branduardi-Raymont G. MPE Report 184. X-ray and UV Emission from Active Galactic Nuclei. October 1984, p.88.

EX01102.8+2539, an X-ray Variable AGN. Beuermann, K. MPE Report 1984. X-ray and UV Emission from Active Galactic Nuclei. October 1984, p.111.

Multi-frequency observations of active galactic nuclei. Tanzi, E.G., Chiappetti, L., Danziger, J., Palomo, R., Maccagni, D., Maraschi, L., Treves, A., Wamsteker, W. Proc. 4th European IUE Conference 15-18 May 1985, Rome. ESA SP(218), 111.

X-ray timing and spectral observations of active galactic nuclei. McHardy, I.M. Proceedings: 'Non-thermal and very high temperature phenomena in X-ray Astronomy, Rome, 1983. p.117.

EXOSAT Observations of Active Galactic Nuclei. Pounds, K.A., McHardy, I.M., Stewart, G., and Warwick, R.S. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.409.

EXOSAT Observations of Three Bright BL Lac objects. Warwick, R.S. McHardy, I.M., Pounds, K.A. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.467.

IUE-EXOSAT Observations of NGC 4151. Perola, G.C., Altmore, A., Boksenberg, A., Bromage, G.E., Clavel, J., Elvius, A., Penson, M.V., Pettini, M., Piro, L., Snijders, M.A.J., Tarenghi, M., and Ulrich, M.H. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.475.

The Soft X-ray emission from ON 235 and MK766. Maccagni, D., Garilli, B., Rampini, A., Chiappetti, L., & Giommi, P. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.479.

EXOSAT observation of the Perseus Cluster. Branduardi-Raymont, G., Kellett, B., Fabian, A.C., McGlynn, T., Manzo, G., Peacock, A. Adv. Space Res., Vol. 5, No. 3, p.133, 1985.

EXOSAT observation of Active Galactic Nuclei. Branduardi-Raymont, G., Bell-Burnell, S.J., Kellett, B., Fink, H., Molteni, D., McHardy, I. Adv. Space Res., Vol. 5, No. 3, p.129, 1985.

Broad band X-ray spectra and time variability of selected Active Galactic Nuclei observed with EXOSAT. Pounds, K. Proceedings Japan-US Seminar on Galactic and Extragalactic compact X-ray sources. Tokyo, 1985, p.26.

EXOSAT observations of a 2000s intensity dip in Seyfert Galaxy NGC 4151. Whitehouse, D.R., Cruise, A.M. Nature, 315(1985) p.554.

The Soft X-ray spectrum of NGC 4151. Pounds, K.A., Warwick, R.S., Culhane, J.L., and de Korte, P. Space Science Reviews, 40 (1985), Nos. 1-4, p.585.

Simultaneous EXOSAT-IUE observations of NGC 4151. Perola, G.C., Altamore, A., Boksenberg, A., Bromage, G.E., Clavel, J., Elvius, A., Penston, M.V., Pettini, M., Piro, L., Snijders, M.A.J., Tarenghi, M. and Ulrich, M.H. Space Science Reviews, 40 (1985), Nos. 1-4, p.593.

EXOSAT Observations of the BL Lac object MKN 421. Warwick, R.S., McHardy, I. and Pounds, K.A. Space Science Reviews, 40 (1985), Nos. 1-4, p.597.

X-ray variability of the Bright BL Lac object PKS 2155-304. Morini, M., Maccagni, D., Maraschi, L., Molteni, D., Tanzi, E.G., and Treves, A. Space Science Reviews, 40 (1985), Nos. 1-4, p.601.

Variability of BL Lac objects at X-ray and other frequencies. Pollock, A.M.T., Brand, P.W.J.L., Bregman, J.L. and Robson, E.I. Space Science Reviews, 40 (1985), Nos. 1-4, p.607.

H0332+022: Classification as a BL Lac and EXOSAT coordinated observations. Bradt, H., Baldwin, J., Geldzahler, G., Madejski, G., Massey, P., McClintock, J., McHardy, I., McMahan, R., Ohashi, T., Remillard, R., Romanishin, W., Salter, C., Schaefer, B., Schwartz, D., Tapia, S., Thorstensen, J., Urry, C.M., Wehinger, P., Wilson, A. and Wyckoff, S. Space Science Reviews, 40 (1985), Nos. 1-4, p.613.

MR 2251-178: Preliminary results of an X-ray monitoring programme. Stewart, G.c., Pounds, K.A. and Stanger, V.A. Space Science Reviews, 40 (1985), Nos. 1-4, p.619.

X-ray spectral variability of 3C273. Turner, M.J.L., Courvoisier, T., Staubert, R., Molteni, D. and Trümper, J. Space Science Reviews, 40 (1985), Nos. 1-4, p.623.

EXOSAT Observation of the QSO Galaxy pair 1E0104.2+3153. Giommi, P., Gioia, I.M. and Maccacaro, T. Space Science Reviews, 40 (1985), Nos. 1-4, p.627.

EXOSAT spectra of some Bright QSO's. McGlynn, T.A., Tennant, A.F., Shafer, R.A. and Stewart, G.C. Space Science Reviews, 40 (1985), Nos. 1-4, p.633.

The X-ray and optical variability of the BLRG 3C390.3. Shafer, R., Ward, M., and Barr, P. Space Science Reviews, 40 (1985), Nos. 1-4, p.637.

Optical observations of serendipitous EXOSAT Sources in the Coma Cluster. Branduardi-Raymont, G., Mason, K.O., Murdin, P.G., Martin C. and McKechnie, S.P. Space Science Reviews, 40 (1985), Nos. 1-4, p.647.

Serendipitous EXOSAT Sources in the region of the Coma Cluster: Active Galactic Nuclei with steep X-ray spectra. Branduardi-Raymont, G., Mason, K.O., Murdin, P.G., Martin, C. M.N.R.A.S. (1985), 216, 1043-1055.

EXOSAT observation of a strong soft X-ray excess in MKN 841. Arnaud, K.A., Branduardi-Raymont, G., Culhane, J.L., Fabian,A.C., Hazard, C., McGlynn, T.A., Shafer, R.A., Tennant, A.F., Ward,M.J. M.N.R.A.S. (1985), 217, 105-113.

Continuous rapid X-ray variability and spectral changes in NGC 4051. Lawrence, A., Watson, M.G., Pounds, K.A., Elvis, M. M.N.R.A.S. (1985) 217, 685-700.

Supernova Remnants (SNR)

X-ray spectra of Supernova Remnants: observations in continuum and lines. Bleeker, J.A.M. Proceedings: 'Non-thermal and very high temperature phenomenon in X-ray Astronomy, Rome, 1983, p.77.

The X-ray structure of the Crab Nebula. Aschenbach, B., Brinkmann, W., Langmeier, A., Hasinger, G., and Bork, T. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.302. Also in Adv. Space Res., Vol. 5, No. 3, p.45, 1985.

EXOSAT Observations of SN 1006. Jones, L.R., Pye, J.P., Culhane, J.L. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.305.

Recent results on the Crab pulsar X-ray light curve. Hasinger, G. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.321.

EXOSAT observations of the Supernova Remnant Cas A. Jansen, F.A., McKechnie, S.P., de Korte, P.A.J., Bleeker, J.A.M., Gronenschild, E., Peacock, A., Manzo, G., Branduardi-Raymont, G., & Kellett, B. Proceedings Int. Symposium on X-ray Astronomy, Bologna, 1984. p.289. Also in Adv. Space Res., Vol. 5, No. 3, p.49, 1985.

Galactic Supernova Remnants. Aschenbach, B. Space Science Reviews 40 (1985), Nos. 1-4, p.447.

X-ray spectrum of the Tycho SNR observed with EXOSAT. Davelaar, J., Morini, M., Peacock, A., Robba, N.R. and Taylor, B.G., Space Science Reviews, 40 (1985), Nos. 1-4, p.467.

EXOSAT PSD and CMA observations of the SNR PKS 1209-52. Kellett, B.J. Space Science Reviews, 40 (1985), Nos. 1-4, p.475.

Mapping of the Cygnus Loop with EXOSAT. Ballet, J., Arnaud, M., Rocchia, R. and Rothenflug, R. Space Science Reviews, 40 (1985), Nos. 1-4, p.481.

EXOSAT LE-CMA observations of the Vela Supernova Remant. Smith,A. and Zimmermann, H.-U. Space Science Reviews, 40 (1985), Nos. 1-4, p.487.

Some crucial X-ray observations - one or two SNR(s) in Crux? Mereghetti, S., Bignami, G.F., Caraveo, P.A., Goldwurm, A. and Palumbo, G.G.C. Space Science Reviews, 40(1985), Nos. 1-4, p.495.

2-10 keV spectra of Crab-like SNR's as observed by EXOSAT. Davelaar, J. and Smith. A. Space Science Reviews, 40 (1985), Nos. 1-4, p.513.

Spectral Observation of the Composite Supernova Remnant G29.7-0.3 Koch-Miramond, L., Rocchia, R., Davelaar, J., Jansen, F.A., Becker, R.H.J., and Braun, R. Space Science Reviews, 40 (1985), Nos. 1-4, p.521.

Thermal radiation from a radio pulsar PSR 1055-52. Brinkmann, W., Ögelman, H. and Aschenbach, B. Space Science Reviews, 40 (1985), Nos. 1-4, p.527.

The X-ray spectrum of the Supernova Remnant W498 from EXOSAT. Smith A., Jones L.R., Peacock, A., Pye, R. Ap.J. 296, 469-474, 1985.

Non-ionisation equilibrium effects in the SNR RCW86. Claas, J.S., Peacock, A. Proc. Proc. ESA Workshop: Cosmic X-ray Spectroscopy Mission, Lyngby, Denmark. ESA SP-239, 1985 p.107.

Clusters (CLU)

EXOSAT 2-10 keV observations of M87 and the Virgo Cluster. Smith, A. and Stewart, G. Space Science Reviews, 40 (1985), Nos. 1-4, p.661.

Abell 1367 and 1060 observed with EXOSAT. Norgaard-Nielsen, H.U. Westergaard, N.J. and Hansen, L. Space Science Reviews, 40 (1985), Nos. 1-4, p.669.

EXOSAT observations of NGC 1399 and NGC 1404: Two elliptical galaxies in the centre of the Fornax Cluster. Mason, K.O. and Rosen, S.R. Space Science Reviews, 40 (1985), Nos. 1-4, p.675.

EXOSAT Observations of the poor cluster of galaxies 2A0335+096. Norgaard-Nielsen, H.U., Westergaard, N.I., Hansen, L., Jorgensen, H.E., Schnopper, H. Proc. ESA Workshop: Cosmic X-ray Spectroscopy Mission, Lyngby, Denmark. ESA SP-239, 1985 p.155.

General

First Results from the X-ray Satellite EXOSAT. Biermann, P., Mitteilungen der Astronomischen Gesellschaft Nr. 62, p.101-121, 1984 (Minden 1984).

The EXOSAT mission. Taylor, B.G. Adv. Space Res., Vol. 5, No.3, p.35, 1985.

EXOSAT - A Service to the Astronomical Community. Sternberg,J.R. Proc. of IX Int. CODATA Conference 1984. Published in 'The Role of Data in Scientific Progress'. Elsevier (1985) Jerusalem.

EXOSAT and Einstein high resolution images of the small Magellanic Cloud. Jones, L.R. Pye, J.P., and Fairall, A.P. Space Science Reviews, 40 (1985), Nos. 1-4, p.693.

GB841215, the fastest γ-ray burst. Laros, J.G., Fenimore, E.E., Fikani, M.M., Klebesadel, R.W., van der Klis, M., Gottwald, M. Nature, 318, (1985), p.448.

* Denotes publications which are additions to the bibliography during the period 1.1.86 to 28.2.86.

NB: Reprints are obtainable from authors in the usual way.

REFINEMENTS TO THE GSPC CALIBRATIONS

An observation of the Crab in October 1985 and a ground calibration have allowed a further improvement in our understanding of the parameters of the EXOSAT GSPC. This new information has been incorporated into the procedure used to calibrate the GSPC and results in a small change in the effective areas and burst length acceptance efficiencies as a function of energy. Tests on GSPC data from a selection of sources indicate that these changes produce little noticeable difference in comparison with results obtained earlier. However, the new calibrations will be incorporated into the CCF for completeness. In addition, this opportunity was used to correct a small error made during the earlier calibrations which gave an equivalent hydrogen column density for the Crab of 5×10^{21} H cm^{-2} instead of 3.5×10^{21} H cm^{-2}. The details of the two improvements are as follows:

1. The gain jump at the L edge, the cause of the "bump" at 4.7 keV, has now been measured by Paul Lamb at MSSL using an almost identical instrument flown on Spacelab 1 (Lamb et al. to be published). Their measurements give a jump at the L_{III} edge (4.78 keV) of 60 eV and another jump at the L_{III} edge (5.10 keV) of 20 eV. Using these values the detector offset was recalculated and found to be +140 eV (cf. Express No.11 p.51). The effective areas were redetermined using these new values and are listed in Table 1.

2. The burst length discrimination efficiency as a function of energy was originally obtained by making three sequential observations on the Crab in the two settings used (84-107 and 89-104) and in the wide open setting (39-126) and dividing the resulting background subtracted spectra. The problem with this technique is that any small gain drifts during the observation will cause inaccuracies in the resulting efficiencies which might be noticeable on bright sources. To improve this, a Crab observation was made in October 1985 using the GDIR OBC program, which gives both the burst length and energy for each event. Thus the appropriate burst length setting could be selected from the same data without any uncertainty concerning gain variations. A new subroutine, listed in Appendix 1, calculates the burst length efficiency for a given input energy. It replaces the subroutine given in Express No. 11 p.51.

N.E. White

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      FUNCTION GSAXE(EIN,IBL)
C
C
C   THIS FUNCTION RETURNS THE BURST LENGTH EFFICIENCY AS A FUNCTION
C       OF INPUT ENERGY, EIN.                        NEW 21/2/86
C
C   THIS USES CRAB FALL 85 OBSERVATION
C
C   ACCEPTANCES   IBL=0   WIDE OPEN
C                     1   89-107
C                     2   89-104
C
C
      DIMENSION E(5),POL1(13),POL2(13)
      DATA E/0.0,25.0,55.0,135.0,195.0/
C
C
C
C   89-107/WO: SPLINE FIT TO 85 CRAB DIRECT DATA
C
      DATA POL1/0.457,0.124E-01,-0.268E-03,0.375E-05,0.868E-02,
     *-0.366E-03,0.662E-05,0.257E-02,-0.129E-04,0.349E-07,-0.728E-03,
     *0.387E-04,-0.379E-06/
C
C
C   89-104/WO
C
      DATA POL2/0.38,0.992E-02,-0.225E-03,0.337E-05,0.867E-02,
     *-0.435E-03,0.825E-05,0.245E-02,-0.325E-05,-0.262E-07,0.428E-03,
     *-0.724E-05,0.194E-06/
C
C
C
      DATA NMIN/25/,NMAX/200/
C
C
C
      IF(IBL.NE.0)GO TO 1
      GSAXE=1.0
      RETURN
    1 CONTINUE
      CHAN=(EIN-0.140)/0.076524+0.5
      IF(CHAN.LT.NMIN)CHAN=NMIN
      IF(CHAN.GT.NMAX)CHAN=NMAX
      CHAN=CHAN-NMIN+1
      IF(IBL.EQ.1)CALL SPLIN(POL1,E,4,CHAN,GSAXE)
      IF(IBL.EQ.2)CALL SPLIN(POL2,E,4,CHAN,GSAXE)
      IF(GSAXE.GT.1.0)GSAXE=1.0
      RETURN
      END
```

APPENDIX 1

1	1.0000	.0000
2	1.1000	.0000
3	1.2000	.0001
4	1.3000	.0014
5	1.4000	.0131
6	1.5000	.0704
7	1.6000	.2612
8	1.7000	.7349
9	1.8000	1.6708
10	1.9000	3.2393
11	2.0000	5.5522
12	2.1000	8.6421
13	2.2000	12.4647
14	2.3000	16.9171
15	2.4000	21.8623
16	2.5000	27.1513
17	2.6000	32.6401
18	2.7000	38.2001
19	2.8000	43.7231
20	2.9000	49.1231
21	3.0000	54.3351
22	3.1000	59.3124
23	3.2000	64.0235
24	3.3000	68.4498
25	3.4000	72.5825
26	3.5000	76.4198
27	3.6000	79.9655
28	3.7000	83.2270
29	3.8000	86.2141
30	3.9000	88.9382
31	4.0000	91.4116
32	4.1000	93.6467
33	4.2000	95.6557
34	4.3000	97.4505
35	4.4000	99.0425
36	4.5000	100.4420
37	4.6000	107.6631
38	4.7000	105.8454
39	4.8000	105.9191
40	4.9000	104.2960
41	5.0000	112.7703
42	5.1000	115.2408
43	5.2000	116.6736
44	5.3000	117.9951
45	5.4000	119.2110
46	5.5000	120.7518
47	5.6000	121.7985
48	5.7000	122.7561
49	5.8000	123.6291
50	6.3000	126.8723
51	6.8000	128.5724
52	7.3000	129.0935
53	7.8000	128.7253
54	8.3000	127.7065
55	8.8000	126.2384
56	9.3000	124.4961
57	9.8000	122.6334
58	10.3000	120.9184
59	10.8000	119.1298
60	11.3000	117.1375
61	11.8000	114.9598
62	12.3000	112.6135
63	12.8000	110.1148
64	13.3000	107.4805
65	13.8000	104.7276
66	14.3000	101.8735
67	14.8000	98.9366
68	15.3000	95.9356
69	16.3000	89.8161
70	17.3000	83.6596
71	18.3000	77.5942
72	19.3000	71.7242
73	20.3000	66.1269
74	25.3000	43.3278
75	30.3000	28.6124
76	35.3000	74.9352
77	40.3000	61.7569
78	45.3000	50.4695
79	50.3000	41.1802
80	55.3000	33.6961
81	60.3000	27.7215
82	65.3000	22.9619
83	70.3000	19.1610
84	75.3000	16.1110

Table 1 - GSPC Effective Areas (March 1986)

MODIFICATION OF GSPC CCF

A history of the GSPC background is added to the GSPC CCF. The evolution of the background is given by 6 standard background spectra for individual periods from 1983-1986. The background spectra reside in the newly defined data type HB which consists of 20 records. For the moment only the first 12 records are used.

Each background spectrum covers 2 records. Within a record, each pair of bytes gives the count rate in counts/1000 sec per energy channel in the corresponding channel. The accumulation time of the spectrum is given in the last 2 bytes of the second record of each spectrum in units of 8 sec.

Record 1

Bytes	0-1	c in #1
"	2-3	c in #2
.		
.		
.		
Bytes	254-255	c in #128

Record 2

Bytes	0-1	c in #129
.		
.		
.		
Bytes	254-255	Accumulation time in units of 8 sec.

Record 1, 2:	Background	(gain 2)	for period	prior	day	300/84
3, 4:	"	(gain 1)	"	"	"	
5, 6:	"	(gain 2)	calculated	around	day	10/85
7, 8:	"	(gain 2)	"	"	"	160/85
9,10:	"	(gain 1)	"	"	"	180/85
11,12:	"	(gain 2)	"	"	"	1/86

The background spectra in record 1,2 and 3,4 are identical to the spectra in data type B1, B2. All 6 spectra have been smoothed (average over 3 bins).

The new effective areas as given on p.34 have been incorporated into the CCF (for the layout of data type EA, see Express No. 12 p.74). Also the parameters E^*_j, $P1_j$, $P2_j$, $S1_j$, $S2_j$ in record 4 of data type EA for the transformation to burst length windows 89-107 and 89-104 have been improved and updated in the CCF.

M. Gottwald

POST-OPERATIONS EXOSAT ACTIVITIES

We have been giving some thought to EXOSAT activities in the period following the end of the EXOSAT orbital operations phase. For the first time ESA will have in its possession a usable and complete data base derived from the operation of one of its satellites. All other ESA missions that have come to the end of their days have been of the principal investigator (P.I.) type, ie. the instrumentation was supplied by national P.I's and the data derived were the property of the P.I.

A paper was prepared for the delegate body, the Science Programme Committee (SPC), setting out the Agency's plans for EXOSAT in the post operational phase. The paper was given unanimous support by the advisory scientific groups ie. the Astrophysics Working Group and the Space Science Advisory Committee. The SPC at its meeting on February 7th, 1986 unanimously approved the plans described in ESA/SPC(86)3.

ESA continues to operate IUE, and like EXOSAT, IUE has built up over the years a valuable, much used data base. It is anticipated that, if and when IUE orbital operations are terminated a similar scheme will be implemented.

B.G. Taylor
ESTEC

ESA/SPC(86)3
Annex: ASTRO(86)3
Paris, 20 January 1986
(Original: English)

EUROPEAN SPACE AGENCY

SCIENCE PROGRAMME COMMITTEE

Plans for the post-operational phase of EXOSAT

1. Introduction

EXOSAT's orbital operations will terminate in the latter half of 1986 due to orbit decay and/or loss of attitude control gas. IUE's orbital operations, from an ESA viewpoint, will terminate either following catastrophic satellite failure, or should funding for further mission extension not be approved.

Both missions represent a very significant investment of the Scientific Programme and both have generated and are continuing to generate invaluable data-bases, which will be used by researchers long after the termination of mission operations.

The advisory bodies, the Astrophysics Working Group and the Space Science Advisory Committee, and the SPC have emphasised, particularly in discussion of the long range plans for a 'European Space Information System', the need, not only to preserve eventually such data in an archive but to keep them readily accessible and useable in the shorter, post-operational term.

This paper outlines the Executive's plan for the development and maintenance of the EXOSAT data-base, together with the necessary scientific competence, to support the scientific community. The SPC is requested to approved this plan.

2. The needs of post-operational support and timescale

After the transmission from EXOSAT of its last bit, (the situation for IUE being broadly similar) there will be a backlog of production of final observation tapes and auto-analysis production to be cleared. There will also be considerable tidying-up of documentation, including the need for an analysis of the operations themselves for feed-on to future missions, e.g. ISO and the X-Ray Cornerstone, etc. While the data remain proprietary to the observer for one year after despatch, it will be necessary to continue support to the 'last' observers as is done for current observers. On a longer timescale it can be anticipated that updating of instrument calibration, software modifications etc. will be required.

The EXOSAT interactive analysis system is providing a major facility to observers not only at a time close to the observation but more importantly for later analysis. Since its availability to the community, it has been almost continuously fully booked. It will be necessary to continue to provide this support if the EXOSAT mission is to be fully exploited.

Data from early in the mission are now entering the public domain and eventually, of course, all data will be publicly available and support will be required to enable data-base access. Again the need for the interactive facility will be reinforced.

It will be essential to provide the infrastructure, equipment, and scientific personnel for the proper support of the scientific community wishing to exploit the EXOSAT data. This infrastructure must include the scientists of the Observatory Team familiar with EXOSAT's instrumentation and the data analysis systems. For the support to the community to be of the right calibre these scientists will pursue their research activities (based on their own observations and archive retrieval) which, during the orbital operational phase have had to take second place to the support rôle.

It will be essential for the data in the data-base to be brought to a common standard, e.g. with respect to current instrument calibration, format etc., bad or insignificant data sets will have to be purged and the data-base properly structured for long-term archive retrieval as needed, for example, by a 'data centre', see ESA/SPC(85)17. This can best be done by scientists actively working with the data.

Defining the time of arrival of the last bit as T_0 the best estimate for the clearing of backlogs, finalising documentation etc. is of the order of six months to a year, i.e. T_0+1. During this interval the requirements on those of the Observatory Team dealing solely with operations will reduce to zero.

It is very difficult to predict the rate of decay of the interest in EXOSAT data, but the next major international missions, fully accessible by the world community, AXAF and the ESA X-Ray Cornerstone, will not fly until the mid-1990's. In the meantime specialist missions, (ROSAT, ASTRO-C and SAX) will fly. Observations with these satellites will, without any doubt, lead to the question - what did EXOSAT see? - if only because of the ubiquitous property of most X-ray sources - time variability.

The response to a questionnaire to the IUE 'community' indicated that intensive use of the IUE data should be foreseen for at least 5 years after termination of orbital operations and this has been used as a guide for EXOSAT.

For present purposes for EXOSAT it is planned that, in the period up to T_0+4 years, the scientific manpower level of the Observatory Team would gradually reduce and that support is provided to the 'level-of-effort' available. The Executive limits the scope of this activity to 4 years at the present time, it being assumed that after this period the

'European Space Information System' or something similar will be in place. In this four year period it is the intention to use the ESIS Network, to be established, to provide catalogue and eventually data access to remote users.

The Executive will monitor the use of the EXOSAT data-base and report back to the SPC as T_0+4 years approaches.

3. Staffing and budget

The Observatory Teams performing the Scientific Operations of EXOSAT and IUE comprise scientific supernumeraries, contract staff and with support from some regular staff members. Currently for full operations the EXOSAT Team comprises some 24 persons. This number would reduce to about the 50% level at T_0+1 year and to 25% level at T_0+4 years. Associated with staff costs would be the running expenditure for missions etc.

The computer systems utilised for data reduction and analysis are, in the case of EXOSAT, largely stand-alone and fully dedicated to the programme. However, capital expenditure for upgrading and/or replacement of certain items must be foreseen together with, of course, the necessary consumables. Some use is made of the ESA main frame computers.

A budgetary estimate is given below for the activities of the Observatory Team over the period from T_0 to T_0+4. Some uncertainties exist, coming from precise dates of staff redeployment, use of main frame, level of staff support and associated overheads etc.

Year TO+	1(1987)	2(1988)	3(1989)	4(1990)
Yearly total (MAU)	1.44	1.10	0.91	0.80

The total figure for the years is 4.25 MAU

The financial situation of the scientific programme (ESA/SPC(85)6 of 10 June 1985 under headings 'EXOSAT' and 'D/Sci Planning Reserve Extensions') foresaw EXOSAT operated fully through to mid-1987 with a nominal run-down, corresponding to and limited to the immediate clearing of backlogs etc. through to mid-1988. The budget earmarked internally was 4.75 MAU. With EXOSAT operations terminating earlier, it is the Executive's proposal to use these funds to support the post-operational phase over the four years as described herein.

Recommendation

The Executive proposes the course of action described here to support EXOSAT in its post-operational phase and invites the SPC to approve the funding as indicated.

ASTRO(86)3
Darmstadt, 9 January 1986

EUROPEAN SPACE AGENCY

ASTRONOMY WORKING GROUP

Recommendation on the EXOSAT post-operational phase

The Astronomy Working Group supports the proposals by the Executive for the post operational phase of the EXOSAT mission as described in ESA/SPC(86)3. The AWG considers it absolutely essential that the invaluable resource represented by the EXOSAT data base be preserved and worked on and the scientific community supported in its use in the years after orbital operations are completed. (The AWG pointed to the intensive ongoing use of the Einstein data base and the excellent science now coming out. The same could be expected for EXOSAT.) The AWG considers that such post-operational phase support should be foreseen by the Executive for IUE (currently still operational) and ISO (currently at the beginning of the development phase).

FORMAT OF PRINTED LINE OF ARCHIVE

The information in the data archive list is from 3 sources:

A = auxiliary data (=manoeuvre history)
F = FOT request file
- = manual (via editor) insertion

description of field	data source	printout format
start time of stable pointing	A	yy/ddd hhmm
end " " " "	A	..ddd hhmm
right ascension (of star tracker)	A	hh mm ss
declination (" " ") (RA & dec are in 1950 epoch; note that these are not the target coordinates - normally target is offset from star tracker by about 2 arc mins)	A	+/-dd mm.m
target name (left justified) (no special convention for names; the + sign to indicate a trim is always the 16th character, if present)	A	up to 16 characters
proposal code : divided into 2 fields,		up to 8 characters
- class of proposal(PV ,TOO,LLX,AGN, OPS,CAL,HLX,CLU,SNR,OCC,EXG, or MIS)	F	
- identification of proposal	F	
principal investigator (a number > 0 pointing to a table of PI's names and addresses. 0 means 'Observatory'.)	F	
4 flags for whether FOTs exist : (space means corresponding FOT doesn't exist)	F	L = LE1 available K = LE2 " M = ME " G = GS "
P.I. name (from FOT request; a blank space is shown if the request was for the Observatory, e.g. for data from performance verification phase; PI name will not be in final log, only the PI number plus list of names)	F	

miscellaneous footnotes:
11 = solar aspect angle < 90 degs. 12 = unstable attitude
15 = ME HTR3 OPT or HTR5 running, in addition to 2 other indicated programs
16 = faulty ME HTR3 OPT data (invalid sampling rate of 32 Hz)
17 = unexplained anomaly in ME HTR3 data
* = 1st pointing of multi-pointing FOT C = continuation of a '*' FOT

EXOSAT DATA ARCHIVE

Jan & Feb 1985

85/016	2048..017	0100	01	06	51	+59	45.9	HT CAS		TOO					0	L	MG		
85/018	1154..018	1930	02	03	03	+14	55.3	TT ARI		LLX	154	16			63	L	MG	Beuermann, Dr. K.	
85/025	0744..025	1241	02	35	48	+16	21.5	0235+164		AGN	085	15	16		19	L	MG	McHardy, Dr. I.	
85/009	1214..009	2022	02	37	33	-34	44.8	FORNAX		AGN	075	16			114	L	MG	Markert, T. H.	
85/008	0325..008	1756	02	39	58	-00	15.7	NGC 1068		AGN	018	16			13	L	MG	Lawrence, Dr. A.	
85/012	1009..012	1825	02	42	32	+36	37.6	A 376		CLU	019				119	L	MG	Mushotzky, R. F.	
85/013	0245..013	1656	02	54	52	+05	48.3	A400		CLU	005				2	L	MG	Morini, Dr. M.	
85/021	0450..021	1912	03	16	21	+41	17.7	NGC1275		CLU	G1	15	16		1	L	MG	Branduardi-Raymont, Dr.	
85/039	2208..040	0305	03	16	53	+18	32.9	0317+18		AGN	118				88	L	MG	Maccagni, Dr. D.	
85/013	1855..013	2314	03	16	54	+18	33.4	0317+18		AGN	118				88	L	MG	Maccagni, Dr. D.	
85/020	1849..021	0340	03	19	01	+41	17.7	PERSEUS EAST		CLU	G1	15	16		1	L	MG	Branduardi-Raymont, Dr.	
85/040	1047..040	1345	03	22	20	+59	30.7	4U0322+59		HLX	079				55	L	MG	Van Paradijs, Dr. J.	
85/023	2205..024	0606	03	23	33	+02	11.8	H0323+022		AGN	076	15	16		111	L	MG	Bradt, H.	
85/025	0047..025	0606	03	23	33	+02	11.8	H0323+022		AGN	076	15	16		111	L	MG	Bradt, H.	
85/009	2310..010	1730	03	27	44	+43	40.9	GK PER		LLX	062	16			57	L	MG	Watson, Dr. M.G.	
85/025	1443..026	0856	03	33	14	+32	5.9	NRAO 140		AGN	017	15	16		107	L	MG	Marscher, A. P.	
85/007	0845..007	1118	03	49	02	-14	40.0	PKS0349-14		AGN	067				111	L	MG	Bradt, H.	
85/040	0456..040	0819	04	03	47	+47	38.3	4U0400+47		HLX	079				55	L	MG	Van Paradijs, Dr. J.	
85/048	2017..048	2231	04	23	12	-08	44.2	IH 0422-086		MIS	011				110	L	MG	Schwartz, Dr. D. A.	
85/044	2335..045	0546	04	29	52	+05	12.9	3C120		AGN	083				8	L	MG	Pounds, Prof. K.A.	
85/024	1726..024	1848	05	00	21	+51	58.4	H0452+518		MIS	005	15	16	*	121	L	MG	Tuohy, Dr. I. R.	
85/057	2220..058	0100	05	00	46	-15	42.4	ABELL 7		LLX	101				147	L	MG	Wulf-Mathies, C.	
85/023	0334..023	0430	05	00	51	-15	43.3	ABELL 7	+	LLX	101	15	16		147	L	MG	Wulf-Mathies, C.	
85/024	1937..024	2115	05	01	21	+52	42.4	H0452+518 TRIM		MIS	005	15	16	C	121	L	MG	Tuohy, Dr. I. R.	
85/007	0023..007	0600	05	12	30	-40	8.6	X0512-40		HLX	027				160	L	MG	Ercan, Dr. E. N.	
85/024	0839..024	1435	05	13	34	-00	15.2	AKN120		AGN	F34	15	16		8	L	MG	Pounds, Prof. K.A.	
85/003	0226..003	1640	05	25	29	-66	8.4	BURST WATCH		TOO	006	11			50	L	MG	Staubert, Dr. R.	
85/036	0845..037	0807	05	31	25	+21	56.5	CRAB		CAL	007				42		MG	Smith, Dr. A.	
85/035	0750..035	1145	05	37	21	-44	6.7	PKS0537-441		CLU	019	16			119	L	MG	Mushotzky, R. F.	
85/055	0228..055	0535	05	37	21	-44	5.7	PKS0537-44		TOO					85	L	MG	Treves, Dr. A.	
85/054	0300..054	1436	05	41	38	-41	5.5	H0542-407		LLX3	-159				121	L	MG	Tuohy, Dr. I. R.	
85/038	0640..038	1138	06	29	28	-61	5.1	IH 0628-609		MIS	011				110	L	MG	Schwartz, Dr. D. A.	
85/054	1735..054	2252	07	10	21	+45	46.4	MKN376		AGN	F34				8	L	MG	Pounds, Prof. K.A.	
85/049	2237..050	1445	07	48	24	-67	37.3	EXO 0751 -674	+	TOO		16			0	L	MG		
85/057	1130..057	1900	07	48	24	-67	37.3	EXO 0748-67	+	TOO				C	0	L	MG		
85/046	0251..046	2250	07	48	26	-67	37.3	0748-676	+	TOO		16		C	0	L	MG		
85/046	0031..046	0130	07	51	07	-67	41.5	0748-676		TOO				*	0	L	MG		
85/057	0307..057	1044	07	53	10	-67	57.3	EXO 0748-67	+	TOO		12		*	0	L	MG		
85/017	2149..018	0821	08	21	16	-42	47.3	PUPPIS A		SNR	67	16			39	L	MG	Aschenbach, Dr. B.	
85/048	0020..048	0329	08	50	24	-47	0.0	H 0900 -42		OPS		16			0	L	MG		
85/042	0819..042	1549	09	00	19	-40	23.6	VELA X-1		HLX	G17				35	L	MG	Peacock, Dr. A.	
85/044	0659..044	2039	09	00	19	-40	23.6	VELA X-1		HLX	G17	16			35	L	MG	Peacock, Dr. A.	
85/048	0443..048	1604	09	00	19	-40	23.5	VELA X-1	+	HLX	G17	16			35	L	MG	Peacock, Dr. A.	
85/006	1800..006	2140	09	43	13	-14	8.2	NGC 2992		AGN	033				8	L	MG	Pounds, Prof. K.A.	
85/051	2152..052	0810	09	50	59	+69	20.1	M81/1E0951.5+691		AGN3	-033			*	236	L	MG		

85/Ø52	Ø834..Ø52	1314	Ø9	51	42	+69	5.1	M81/1EØ951.5+69+		AGN3-Ø33			C	236	L	MG					
85/ØØ9	Ø5Ø4..ØØ9	Ø9Ø3	1Ø	1Ø	Ø7	-57	51.8	HD 88661		LLX 137	16			149	L	MG	Henrichs, H. F.				
85/ØØ6	Ø618..ØØ6	Ø949	1Ø	55	Ø4	+29	55.1	IH1Ø55+299		MIS Ø33				124	L	MG	Wood, Dr. K. S.				
85/ØØ4	1426..ØØ4	18Ø3	11	Ø1	27	+38	28.9	MKN 421		AGN Ø12				172	L	MG	Bowyer, Prof. S.				
85/Ø19	Ø927..Ø19	193Ø	11	22	41	-58	58.7	G292.Ø+1.8		SNR F47				35	L	MG	Peacock, Dr. A.				
85/Ø12	Ø3ØØ..Ø12	Ø6ØØ	11	34	48	+Ø2	6.Ø	RZ LEO		TOO				Ø	L	MG					
85/Ø05	Ø538..Ø05	12Ø7	11	36	42	-37	29.7	NGC 3783		AGN Ø29				18	L	MG	Bell-Burnell, Dr. S.J.				
85/Ø53	1838..Ø54	ØØØ2	11	36	45	-37	28.7	NGC 3783		AGN Ø29				18	L	MG	Bell-Burnell, Dr. S.J.				
85/ØØ1	16Ø9..ØØ2	Ø251	11	45	47	-61	58.2	4U1145-619		HLX Ø48	11	15		162	L	MG	Willingale, R.				
85/ØØ2	1818..ØØ3	ØØ37	11	45	47	-61	58.2	4U1145-619		HLX Ø48	11	15		162	L	MG	Willingale, R.				
85/ØØ4	2124..ØØ5	Ø337	11	45	51	-61	57.4	4U1145-619		HLX Ø48	11			162	L	MG	Willingale, R.				
85/ØØ5	2149..ØØ6	Ø337	11	45	51	-61	57.4	4U1145-619		HLX Ø48	11			162	L	MG	Willingale, R.				
85/ØØ8	21Ø5..ØØ9	Ø337	11	45	51	-61	58.Ø	4U1145-619		HLX Ø48	11	15		162	L	MG	Willingale, R.				
85/ØØ2	Ø6Ø5..ØØ2	133Ø	12	Ø7	49	+39	43.Ø	NGC 4151		AGN Ø97	15	16		87	L	MG	Perola, Prof. G.				
85/Ø27	Ø212..Ø28	Ø336	12	Ø8	26	+39	43.4	1E12Ø7+39		AGN 118	16			88	L	MG	Maccagni, Dr. D.				
85/ØØ5	1529..ØØ5	1834	12	18	41	+3Ø	28.6	2A1219+3Ø5		AGN Ø34				21	L	MG	Warwick, Dr. R.S.				
85/Ø29	Ø923..Ø29	1346	12	18	52	+3Ø	27.2	2A1219+3Ø5	+	AGN Ø34	16			21	L	MG	Warwick, Dr. R.S.				
85/Ø2Ø	Ø254..Ø2Ø	Ø53Ø	12	19	Ø1	+3Ø	29.1	2A1219+3Ø5		AGN Ø34	15	16		21	L	MG	Warwick, Dr. R.S.				
85/Ø5Ø	1725..Ø5Ø	2Ø3Ø	12	23	48	-62	49.6	GX3Ø1-2		HLX3-Ø39			*	Ø	L	MG					
85/Ø5Ø	2133..Ø51	1734	12	23	5Ø	-62	29.6	GX3Ø1-2	+	HLX3-Ø39			C	Ø	L	MG					
85/Ø58	Ø34Ø..Ø6Ø	Ø1Ø9	12	24	Ø9	-62	3Ø.3	GX3Ø1-2		HLX3-Ø39				226	L	MG	White, Dr. N.				
85/Ø47	ØØ4Ø..Ø47	1326	12	24	11	-62	29.8	GX3Ø1-2		HLX3 Ø39	16			226	L	MG	White, Dr. N.				
85/Ø38	1825..Ø39	1935	12	24	15	-62	29.9	GX3Ø1-2		OPS3-ØØ1	16			Ø	L	MG					
85/Ø32	1334..Ø32	19ØØ	12	26	41	+Ø2	2Ø.3	3C273		AGN G15	15	16		25	L	MG	Turner, Dr. M.J.L.				
85/Ø14	1719..Ø14	2333	12	27	24	-16	15.7	HD 1Ø8767		LLX 16Ø				151	L	MG	Gahm, Dr. G.				
85/Ø34	1155..Ø34	2Ø24	12	39	27	-59	54.8	3A 1239-59		HLX Ø52				99	L	MG	Trumper, Prof. Dr. J.				
85/Ø47	1416..Ø47	21ØØ	12	46	55	-58	47.9	1244-588		TOO2 ØØ9	16			Ø	L	MG					
85/Ø42	Ø135..Ø42	Ø52Ø	12	51	1Ø	-22	35.1	PK 3Ø3+4Ø.1		LLX 11Ø	16			66	L	MG	De Korte, Dr. P.A.J.				
85/Ø4Ø	1758..Ø4Ø	2Ø3Ø	12	59	49	+12	4Ø.2	GL 494		LLX 148				66	L	MG	De Korte, Dr. P.A.J.				
85/Ø34	2348..Ø35	Ø348	13	Ø8	14	+32	39.1	13Ø8+326		AGN Ø85	12	16	C	19	L	MG	McHardy, Dr. I.				
85/Ø2Ø	Ø83Ø..Ø2Ø	Ø929	13	14	ØØ	+29	22.Ø	HZ43		CAL2-ØØ6			C	Ø	L	MG					
85/Ø2Ø	1145..Ø2Ø	1523	13	14	ØØ	+29	24.1	HZ43		CAL2-ØØ6			C	Ø	L	MG					
85/Ø2Ø	1ØØØ..Ø2Ø	1114	13	14	Ø4	+29	22.2	HZ43		CAL2-ØØ6			C	Ø	L	MG					
85/Ø2Ø	Ø641..Ø2Ø	Ø75Ø	13	14	1Ø	+29	23.4	HZ43		CAL2-ØØ6			*	Ø	L	MG					
85/Ø42	1918..Ø44	Ø4Ø9	13	23	27	-61	47.8	1323-62		HLX F42				58	L	MG	Van der Klis, Dr. M.				
85/Ø4Ø	2259..Ø41	Ø15Ø	13	43	26	+15	1Ø.5	GL 526		LLX 171				154	L	MG	Schmitt, J. H.				
85/ØØ6	122Ø..ØØ6	1529	13	46	26	+Ø8	12.4	PG 1346+Ø82		CLU ØØ3	11			87	L	MG	Perola, Prof. G.				
85/Ø31	Ø644..Ø31	1436	13	46	36	+Ø8	13.9	PG1346+Ø82		TOO	12	16	C	Ø	L	MG					
85/Ø17	1135..Ø17	1816	13	46	43	+26	51.4	3A1346+2.59	+	CLU ØØ3	16		C	87	L	MG	Perola, Prof. G.				
85/Ø17	Ø336..Ø17	1114	13	46	48	+26	51.4	3A1346+2.59		CLU ØØ3	16		*	87	L	MG	Perola, Prof. G.				
85/Ø35	2215..Ø36	Ø434	13	53	52	+38	51.1	MK 464		AGN ØØ7	16			18	L	MG	Bell-Burnell, Dr. S.J.				
85/Ø23	1326..Ø23	1845	13	59	17	-1Ø	54.4	A 1837		CLU Ø13	16			66	L	MG	De Korte, Dr. P.A.J.				
85/Ø31	16Ø5..Ø32	1Ø19	14	Ø2	28	+Ø4	17.3	14Ø2+Ø4		CAL ØØ7	16			Ø	L	MG					
85/Ø37	1224..Ø37	1645	14	Ø2	29	+Ø4	17.5	14Ø2+Ø4		TOO	16			Ø	L	MG					
85/Ø32	2137..Ø33	Ø327	14	1Ø	47	-Ø2	57.4	NGC55Ø6		AGN G3	15	16		19	L	MG	McHardy, Dr. I.				
85/Ø53	Ø821..Ø53	15Ø9	14	1Ø	48	-Ø2	57.1	NGC55Ø6		AGN G3				19	L	MG	McHardy, Dr. I.				
85/Ø41	Ø435..Ø41	1Ø32	14	1Ø	49	-Ø2	57.2	NGC55Ø6		AGN G3				19	L	MG	McHardy, Dr. I.				
85/Ø23	Ø759..Ø23	1229	14	1Ø	52	-Ø2	56.4	NGC55Ø6		AGN G3	15	16		19	L	MG	McHardy, Dr. I.				
85/Ø14	Ø91Ø..Ø14	15Ø7	14	15	44	+25	24.3	NGC5548		AGN Ø32				1	L	MG	Branduardi-Raymont, Dr.				
85/Ø12	2114..Ø12	2325	14	26	36	+42	56.1	IH143Ø+423		MIS Ø11				11Ø	L	MG	Schwartz, Dr. D. A.				
85/Ø55	1451..Ø55	18ØØ	14	27	14	+42	49.6	1H 143Ø+423	+	OPS3-ØØ2			C	Ø	L	MG					

85/Ø55	1145	Ø55	1356	14	3Ø	11	+42	23.4	1H 143Ø+423		OPS3-ØØ2			*	Ø	L MG	
85/Ø35	1516	Ø35	21ØØ	14	4Ø	13	+35	41.1	MKN 478		AGN 123	16			16	L MG	Bergeron, Dr. J.
85/Ø29	1645	Ø29	194Ø	14	52	17	+16	19.2	GL 569		LLX 148	16			66	L MG	De Korte, Dr. P.A.J.
85/Ø1Ø	2129	Ø11	Ø526	15	Ø2	Ø7	+47	53.9	44 BOO		LLX F86	16			61	L MG	Heise, Dr. J.
85/Ø15	1641	Ø16	1139	15	3Ø	57	-44	15.8	4U153Ø-44	FIRST	CAL ØØ5	11			Ø	M	
85/Ø55	21Ø2	Ø55	2328	15	35	52	+19	3.Ø	LX SER		TOO2-Ø1Ø				Ø	L MG	
85/Ø56	Ø3ØØ	Ø56	1318	16	17	Ø5	-15	31.2	SCO X-1		HLX Ø71				176	L MG	Priedhorsky, Dr.W.
85/Ø33	Ø931	Ø33	22Ø9	18	46	45	+79	42.7	3C39Ø.3	+	TOO ØØ9	15	16	C	Ø	L MG	
85/Ø33	Ø639	Ø33	Ø914	18	47	Ø1	+79	59.4	3C39Ø.3		TOO ØØ9	15	16	*	Ø	L MG	

ARCHIVE RELEASE LIST

A list is provided below of archive data which has already been released according to the procedure outlined in Express No.10 p.52.

Day	Yr.	Target	P.I.	Requested by	Data
256	83	BD75-325	De Korte	Wulf-Mathies, C.	L1,L2,ME
264	83	HD497985	De Korte	Wulf-Mathies, C.	L1,L2,ME
051	84	HD127493	De Korte	Wulf-Mathies, C.	L1
197	83	Coma Cluster	PV/CAL	Giommi, P.	L1,L2
170	83	Cygnus X-1	PV/CAL	Lewin, W.	ME
209	83	Cyg X-1	PV/CAL	Lewin, W.	ME
268	83	Cyg X-1	Page	Lewin, W.	ME
072	84	GX339-4	Ilovaisky	Lewin, W.	ME
242	83	4U1627-67	Mason	Lewin, W.	ME
065	84	4U1624-49	Watson	Lewin, W.	ME
214	83	1702-363	PV/CAL	Lewin, W.	ME
175	83	1837+049	PV/CAL	Lewin, W.	ME
198	83	GX339-4	Ilovaisky	Lewin, W.	ME
228	83	3C120	Chiappetti	Stanger, V.	L1,L2,ME
305	83	3C120	Tanzi	Stanger, V.	L1,ME
358	83	M82	Biermann	Stanger, V.	L1, ME

RELEASE DATE: 4.10.1985

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033	84	MKN 421	Warwick	Bowyer, S.	L1,ME,GS
033	84	2A1219+305	Warwick	Bowyer, S.	L1,ME,GS
036	84	MKN 501	Warwick	Bowyer, S.	L1,ME,GS
036	84	MKN 401	Warwick	Bowyer, S.	L1,ME,GS
036	84	2A1219+305	Warwick	Bowyer, S.	L1,ME,GS

RELEASE DATE. 30.11.1985

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070	84	Sco X-1	Peacock	Hertz, P.	L1
072	84	Sco X-1	Peacock	Hertz, P.	L1
257	83	GX5-1	Peacock	Hertz, P.	L1
257	83	H2252-035	Kendziorra	Hertz, P.	L1
175	83	1758-205	PV/CAL	Hertz, P.	L1
215	83	GX17+2	PV/CAL	Hertz, P.	L1
215	83	GX17+2	PV/CAL	Stella, L.	ME
175	83	1837+049	PV/CAL	Stella, L.	ME
213	83	1702-363	PV/CAL	Stella, L.	ME
257	83	GX5-1	Peacock	Stella, L.	ME
257	83	H2252-035	Kendziorra	Stella, L.	ME
310	83	NGC7213	Pounds	Sembay, S.	ME
310	83	NGC 426A	Turner	Sembay, S.	ME
310	83	MR 2251-179	Pounds	Sembay, S.	ME
310	83	MCG2-58-22	Pounds	Sembay, S.	ME

Day	Yr.	Target	P.I.	Requested by	Data
347	83	PSR 0031-07	Bell-Burnell	Sembay, S.	ME
347	83	NGC 3783	Bell-Burnell	Sembay, S.	ME
312	83	MCG 8-11-11	Maraschi	Sembay, S.	ME

RELEASE DATE: 10.1.1986

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179	83	HZ 43	PV/CAL	Wulf-Mathies, C.	L1,L2,ME,GS
233	83	Feige 24	Heise	Wulf-Mathies, C.	L2,ME
233	83	Feige 31	Heise	Wulf-Mathies, C.	L2,ME
292	83	Sirius B	Heise	Wulf-Mathies, C.	L2,ME
241	83	HD 149499B	Heise	Wulf-Mathies, C.	L2,ME
243	83	40 Eri B	Heise	Wulf-Mathies, C.	L2,ME
296	83	GR 288	Heise	Wulf-Mathies, C.	L2,ME
326	83	BPM 97859	Heise	Wulf-Mathies, C.	ME
362	83	EG 187	Heise	Wulf-Mathies, C.	ME
274	84	GD 391	Heise	Wulf-Mathies, C.	ME
275	84	MV Lyr	Heise	Wulf-Mathies, C.	ME
213	84	LB 1663	Heise	Wulf-Mathies, C.	ME
205	84	A98	Molteni	Singh, K.P.	L1,ME,GS
160	84	Cen-A	Molteni	Singh, K.P.	L1,ME,GS
160	84	4U1223-63	Re	Singh, K.P.	L1,ME,GS
211	84	Cen-A	Molteni	Singh, K.P.	ME
020	84	NGC 4696	Manzo	Singh, K.P.	ME
093	84	A2147	Morini	Singh, K.P.	ME
197	83	Coma Cluster	PV/CAL	Singh, K.P.	ME
233	83	Feige 24+31	Heise	Hurley, K.	L1
257	83	GX5-1	Peacock	Hurley, K.	L1
257	83	H2252-45	Kendziorra	Hurley, K.	L1
280	83	1822-371	Mason	Hurley, K.	L1
280	83	CN ORI	Mason	Hurley, K.	L1
291	83	LMC X-4	Pakull	Hurley, K.	L1
303	83	LMC X-4	Pakull	Hurley, K.	L1
318	83	LMC X-4	Pakull	Hurley, K.	L1
318	83	3C111	Briel	Hurley, K.	L1
320	83	G0921+06	Pounds	Hurley, K.	L1
321	83	LMC X-4	Pakull	Hurley, K.	L1
326	83	A0543-68	Pakull	Hurley, K.	L1
326	83	LMC X-4	Pakull	Hurley, K.	L1
337	83	A0538-66	McKay	Hurley, K.	L1
027	84	3C111	Briel	Hurley, K.	L1
030	84	EPS CRA	Heise	Hurley, K.	L1
116	84	LMC X-4	Pakull	Hurley, K.	L1

RELEASE DATE: 23.1.1986

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Day	Yr.	Target	P.I.	Requested by	Data
198	83	1636-53	PV	Turner, M.J.	L1,GS
309	83	MKN 335	Pounds	Sembay, S.	ME
251	83	AKN 120	Pounds	Sembay, S.	ME
248	83	NGC 7314	Pounds	Sembay, S.	ME
037	84	MKN 79	Pounds	Sembay, S.	ME
038	84	MKN 876	Pounds	Sembay, S.	ME
234	83	NGC 1068	Lawrence	Sembay, S.	ME
349	83	NGC 3227	Lawrence	Sembay, S.	ME
307	83	MKN 509	Molteni	Sembay, S.	ME
062	84	NGC 5548	Branduardi	Sembay, S.	ME
247	83	ESO141-G55	Branduardi	Sembay, S.	ME
003	84	MKN 590	Bleeker	Sembay, S.	ME
004	84	A1060	Schnopper	Stewart	L1,L2,ME,GS
020	84	Centaurus	Manzo	Stewart	L1,L2,ME,GS
241	83	Sco X-1	Peacock	Staubert, R.	L1,ME
242	83	Sco X-1	Peacock	Staubert, R.	L1,ME
234	83	Feige 24	Heise	Fontaine	L1,ME,GS
069	84	G191B2B	Hesie	Fontaine	L1,ME,GS
241	83	G191B2B	Heise	Fontaine	L1,ME,GS
292	83	Sirius B	Heise	Fontaine	L1,ME,GS
362	83	EG 187	Heise	Fontaine	L1,ME,GS
296	83	GR 288	Heise	Fontaine	L1,ME,GS
326	83	BPM 97859	Heise	Fontaine	L1,ME,GS
294	83	Alpha CM	Mewe	Fontaine	L1,ME,GS
160	84	X0918-549	McKechnie	Ilovaisky, S.	L1,L2,ME,GS
258	84	V0332+53	TOO	Hurley, K.	L1,ME,GS
261	84	V0332+53	TOO	Hurley, K.	L1,ME,GS
292	84	V0332+53	TOO	Hurley, K.	L1,ME,GS
276	84	3C120	Pounds	Tanzi, E.	L1,ME
277	84	3C120	Pounds	Tanzi, E.	L1,ME
280	84	3C120	Pounds	Tanzi, E.	L1,ME
284	84	3C120	Pounds	Tanzi, E.	L1,ME
286	84	3C120	Pounds	Tanzi, E.	L1,ME
093	84	A2147	Morini	Stewart, G.	L1,ME
052	84	A2147	Morini	Stewart, G.	L1,ME
197	83	Coma	PV	Stewart, G.	L1,ME,GS
032	84	MKN 501	Warwick	Bassini, L.	L1,ME,GS
034	84	MKN 501	Warwick	Bassini, L.	L1,ME,GS
036	84	MKN 501	Warwick	Bassini, L.	L1,ME,GS
086	84	MKN 501	Warwick	Bassini, L.	L1,ME,GS
191	84	MKN 501	Warwick	Bassini, L.	L1,ME,GS
201	84	MKN 501	Warwick	Bassini, L.	L1,ME,GS
207	84	MKN 501	Warwick	Bassini, L.	L1,ME,GS
209	84	MKN 501	Warwick	Bassini, L.	L1,ME,GS
215	83	GX 17+2	Trümper	Ercan, E.	ME, GS

RELEASE DATE: 28.2.1986

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OBSERVATORY TEAM

		Ext.
David Andrews	Observatory Manager	705*
Julian Sternberg	Observatory Software	703
Julian Lewis	System Software/HP Computers	702
Nick White	Senior Observatory Scientist	764
Paul Barr	Duty Scientist/Mission Planning	711
Paolo Giommi	"	710
Manfred Gottwald	"	758
Julian Osborne	"	714
Arvind Parmar	"	763
Andrew Pollock	"	716
Rick Shafer	"	712
Luigi Stella	"	715
Anne Fahey	Mission Planning	707
Antonella Flammia	Observatory Controller	427
Maria Gonano	" "	717
Frank Haberl	" "	717
Carlo Izzo	" "	427
Mark Sweeney	" "	716
Gianpiero Tagliaferri	" "	427
Margit Farkas	Data Assistant	713
Grazia Giommi	" "	709
Linda Osborne	" "	709
Sandra Andrews	Secretary	704

*Direct dialling to any extension, prefixed by 886, is possible, eg. 06151-886-705

Please note the following extension numbers: DCR 547
Computer Room 427

Personnel Changes (1.1.86 - 28.2.86)

Dr A. Pollock has been recruited as a Duty Scientist.

Mr P. Ferri has resigned his post as Observatory Controller.

EUROPEAN SPACE AGENCY

Vacancy at the European Space Research and Technology Centre (ESTEC) at Noordwijk, The Netherlands

POST	Scientist in the Astrophysics Division, Space Science Department, Directorate of Scientific Programmes.
GRADE	This post is classified in the A2/A4 grade band of the Coordinated Organisations' scale. A contract for four years will be awarded in the first instance.
LOCATION	ESTEC, Noordwijk, The Netherlands.
DUTIES	The duties involve: - carrying out project and/or study scientist work in connection with approved ESA scientific missions and studies for future missions in astrophysics. In particular, the scientist would be engaged in the support of the ISO mission with regard to the focal plane instruments through all development and operation phases. - carrying out research in infra-red/sub-mm heterodyne astronomy with emphasis on instrument development and observational work.
QUALIFICATIONS	Applicants should hold a Ph.D or equivalent degree in physics or astronomy with experience in infra-red detector technology and cryogenics. Good knowledge of English or French; some knowledge of the other language is desirable.
APPLICATIONS	Applications for this post should reach the Head of Personnel, ESTEC, Keplerlaan 1, 2200 AG Noordwijk, The Netherlands, quoting reference 58/85.

ESA Regulations exclude the recruitment of personnel aged over 55

THE EUROPEAN SPACE AGENCY

VACANCIES FOR RESEARCH FELLOWS

ASTROPHYSICS DIVISION, SPACE SCIENCE DEPARTMENT

at ESTEC, Noordwijk, The Netherlands

in 1986

X-RAY ASTRONOMY - Development of imaging detectors for future space astronomy missions with participation in the analysis of EXOSAT data. (A. Peacock 1719-8-3563).

SUBMILLIMETRE ASTRONOMY - Development of a super-heterodyne system for ground-based submillimetre astronomy, participation in observationl campaigns and data analysis. (M. Kessler 1719-8-3623).

GAMMA-RAY ASTRONOMY - Development of the COMPTEL Instrument for the Gamma Ray Observatory mission and data analysis. (K. Bennett 1719-8-3559).

INFRARED ASTRONOMY - Development of an IR spectroscopic system for ground based work, observations and analysis. (M. Kessler 1719-8-3623).

The research fellowship positions at ESTEC are normally limited to a duration of two years and are normally restricted to persons having a Ph.D or equivalent.

Salary, will depend on qualifications, experience, marital status etc.

A good knowledge of English or French is required with a working knowledge of the other language.

Applications should be directed to the Head of Personnel, ESTEC, Keplerlaan 1, 2200 AG Noordwijk, The Netherlands, including detailed curriculum vitae and stating for which post(s) candidates wish to be considered. For general enquiries phone 1719-8-3308 or, for research details, the above named at the numbers indicated.

QUESTIONNAIRE

☐ There is an error/change of address on the current mailing list; the correct version is given below.

☐ Please add my name and address (printed below) to the EXOSAT Express mailing list.

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Tear off the page and return to: EXOSAT Observatory, ESOC,
Robert Bosch Str. 5,
6100 Darmstadt, W. Germany.