

60 inch Telescope Log
 Observer: CALKINS Barton
 PI: All, Kishner, Kenyon, Mahdavi
 Spectrograph: FAST
 Grating: 3000
 Date: 6/4/99
 Page: 7393

Number	Object	R. A.	Dec.	L/R	Exp	Comments
1-6	DARK				20m	binby 3
7,8	DARK				15m	binby 4
9-18	BIAS				0s	
19-28	FLAT				6s	
29-38	BIAS				0s	binby 2
39-48	FLAT				12s	
49-50	HZ 44	13 23	36 08	#56	2m	
51	comp			↑		
52-53	HZ 44	13 23	36 08	#56	2m	PA = -51°
54	comp			↑		
55-56	sn1999by	9 21	51 00	#2	10m	PA = 90°
57	comp			↑		
58-59	sn1999ci	12 32	19 25	#2	10m	PA = 35° BOOM!!
60	comp			↑		(red)
61	sn1999cf	13 33	33 03	#2	15m	PA = 100° (blue)
62	comp			↑		
63-64	RW Hya	13 34	-25 22	#12	5,6s	PA = 90°
65	comp			↑		
66	ngc1770344/345	12 05	20 33	#59	5m	344 is to the west of 345
67	comp			↑		
68	ngc1770343	12 05	20 28	#59	20m	
69	comp			↑		
70	177-346	12 05	19 42	#59	17m	
71	comp			↑		
72	177-347	12 05	19 46	#59	17m	
73	comp			↑		
74	ngc1-431	15 11	11 23	#73	20m	
75	comp			↑		
76	ngc1-432	15 11	11 23	#73	20m	
77	comp			↑		

60 inch Telescope Log

Spectrograph: FAST

Observer: CALKINS

Grating: 3000

Page: 7394

PI: Darton, Kirshner, Kenyon

Date: 6/4/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
78	NGC 435	15 19	9 47	# 73	20m	
79	comp			↑		
80	NGC 436	15 19	9 46	# 73	20m	
81	comp			↑		
82	SN 1999cc	16 02	37 21	# 2	15m	PA = 110°
83	comp			↑		
84, 85	Her 1341	17 08	-17 26	# 12	23, 5m	
86	comp			↑		
87	Draco 61	17 19	43 49	# 12	10m	
88	comp			↑		
89, 90	M 1m 21	17 39	-19 09	# 12	10, 100s	comp visible?
91	comp			↑		
92, 93	RT Ser	17 39	-11 55	# 12	10, 100	
94	comp			↑		
95, 96	W Ser	17 42	-15 25	# 12	30, 300	
97	comp			↑		
98, 99	RSO ph	17 50	-6 41	# 12	5, 60	
100	comp			↑		
101, 102	V 2416 Sgr	17 57	-21 41	# 12	23, 200	
103	comp			↑		
104, 105	AS 270	18 05	-20 19	# 12	30, 400	
106	comp			↑		
107, 108	AS 289	18 12	-11 39	# 12	5, 60	
109	comp			↑		
110, 111	YY Her	18 14	20 58	# 12	10, 200	
112	comp			↑		
113, 114	V 443 Her	18 22	23 27	# 12	24, 200	
115	comp			↑		
116, 117	V 2601 Sgr	18 38	-22 41	# 12	20, 200	
118	comp			↑		

60 inch Telescope Log

Observer: CALKINS

PI: Kenyon

Spectrograph: FAST

Grating: 200L

Page: 7395

Date: 6/4/99

Number	Object	R. A.	Dec.	L/R	Exp	Comments
119, 120	AS316	18 42	-21 16	¹⁵ 12	20, 200	
121	comp			↑		
122, 123	MWC960	18 47	-20 04	¹⁰ 12	10, 100	object east
124	comp			↑		
125, 126	AS327	18 53	-24 23	¹⁵ 17	30, 300	
127	comp			↑		
128, 129	FN59r	18 53	-18 57	¹⁵ 12	10, 200	
130	comp			↑		
131, 132	V919Sgr	19 03	-16 58	¹¹ 12	10, 200	object east
133	comp			↑		
134, 135	CMAql	19 03	-3 02	¹¹ 12	30, 300	
136	comp			↑		
137-139	BFCy9	19 23	29 38	¹¹ 12	10, 60	
140	comp			↑		
141-143	CHCy9	19 24	50 12	¹¹ 12	1, 5, 30	
144	comp			↑		
145-147	HMSge	19 41	16 42	¹¹ 12	10, 60	much brighter than in Dec !!
148	comp			↑		
149, 150	AS360	19 45	18 37	¹¹ 12	5, 100	← 8 -
151	comp			↑		
152-154	CICy9	19 50	35 40	¹¹ 12	1, 10, 60	
155	comp			↑		
156-158	PVVul	20 21	21 34	¹¹ 12	1, 10, 60	
159	comp			↑		
160-162	V1016Cy9	19 57	39 49	¹¹ 12	1, 10, 60	
163	comp			↑		
164, 165	He2m467	20 35	20 11	¹¹ 12	100, 600	
166	comp			↑		
167-168	He2m468	20 41	34 44	¹¹ 12	100, 600	
169	comp			↑		

60 inch Telescope Log

Spectrograph: FAST

Observer: CALKINS

Grating: 3006

Page: 7396

PI: Xenyon, All

Date: 6/4/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
170, 171	V1329 Cyg	20 51	35 74	#12	2/120	
172	comp			↑		
176	N7331	22 37	34 24	#57	4m	
177	comp			↑		
178	HD192281	20 12	40 16	#6	8s	
179	comp			↑		
180-184	sky			#57	2s	
185	comp			↑		
186-195	BIAS				0s	
196-205	FLAT				60s	
206-215	BIAS				0s	
216-225	FLAT				12s	
226-235	DARK				15m	

60 inch Telescope Log

Spectrograph: FAST

Observer: CALKINS

Grating: 300L

Page: 7397

PI: All, Kirshner, Mahdavi

Date: 6/5/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				15m	
11-20	BIAS				0s	
21-30	FLAT				6s	
31-40	BIAS				0s	
41-50	FLAT				12s	
51-60	FLAT				12s	tilt = 585
61-65	sky			#57	2.5	
66	comp			↑		
67, 68	H244	13 23	36 08	#56	2m	
69	comp			↑		
70, 71	H244	13 23	36 08	#56	2m	PA = -49, Tilt = 585
72	comp			↑		
73, 74	sm1999cl	12 32	14 25	#2	15m	PA = 35, Tilt = 585
75	comp			↑		
76	ngc510.136	11 00	9 57	#59	20m	PA = 20, faint gal, rotated to get more light in slit, Tilt = 610, PA = 90
77	comp			↑		
78	110.139	11 00	9 52	#59	12m	
79	comp			↑		
80	110.140	11 00	10 04	#59	15m	
81	comp			↑		
82	110.142	11 00	10 26	#59	9m	
83	comp			↑		
84	110.145	11 00	10 41	#59	10m	
85	comp			↑		
86	110.151	11 01	10 46	#59	15m	
87	comp			↑		
88	110.152	11 01	9 45	#59	8m	
89	comp			↑		
90	110.160	11 01	10 20	#59	4m	
91	comp			↑		

60 inch Telescope Log

Observer: CALKINS

PI: DALTON, Kenyon

Spectrograph: FAST

Grating: 300L

Date: 6/5/99

Page: 7398

Number	Object	R. A.	Dec.	L/R	Exp	Comments
92	nept-199	12 02	29 50	#73	12m	
93	comp			↑		
94	nept-200	12 02	29 51	#73	10m	
95	comp			↑		
96	nept-207	12 05	17 54	#73	8m	
97	comp			↑		
98	nept-329	14 00	40 58	#73	12m	
99	comp			↑		
100	nept-330	14 00	40 59	#73	15m	
101	comp			↑		
102	nept-333	14 02	9 20	#73	12m	
103	comp			↑		
104	nept-334	14 02	9 20	#73	8m	
105	comp			↑		
106	nept-335	14 02	9 20	#73	12m	
107	comp			↑		
108	nept-336	14 03	9 27	#73	12m	
109	comp			↑		
110	nept-337	14 03	9 28	#73	12m	
111	comp			↑		
112	nept-342	14 04	12 43	#73	20m	
113	comp			↑		
114	ROXRm1	16 25	-24 32	#74	7m	
115	comp			↑		
116	ROXRm14	16 26	-24 17	#74	10m	
117	comp			↑		
118	ROXRm20	16 26	-24 37	#74	15m	
119	comp			↑		
120	ROXRm36	16 27	-24 43	#74	20m	Very faint
121	comp			↑		

60 inch Telescope Log

Observer: CALKINS

PI: Falco

Spectrograph: FAST

Grating: 2006

Page: 7399

Date: 6/5/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
122	18124p6353	18 12	03 53	#84	3m	
123	comp			↑		
124	18205p5220	18 21	52 26	#84	3m	
125	comp			↑		
126	18206p1224	18 23	12 25	#84	5m	object west
127	comp			↑		
128	18253p1444	18 27	14 49	#84	2m	
129	comp			↑		
130	18336p6706	18 33	67 07	#84	2m	
131	comp			↑		
132	18343p1023	18 36	10 26	#84	12m	
133	comp			↑		
134	18382p4000	18 39	40 01	#84	2m	
135	comp			↑		
136	18392p0805	18 11	08 08	#84	15m	PA = 110° !!
137	comp			↑		
138	18418p5259	18 42	53 02	#84	15m	
139	comp			↑		
140	18409p1840	18 43	18 43	#84	2m	
141	comp			↑		
142	19050p2856	19 07	29 00	#84	2.5m	
143	comp			↑		
144	N7331	22 36	34 24	#57	3.5m	
145	comp			↑		
146	HD192281	20 12	40 16	#56	7s	
147	comp			↑		
148-157	BIAS				0s	
158-167	FLAT				6s	
168-177	BIAS				0s	
178-187	FLAT				12s	
188-197	DARK				15m	

60 inch Telescope Log		Spectrograph: <u>FAST</u>		Page: <u>7400</u>		
Observer: <u>CALKINS</u>		Grating: <u>300L</u>		Date: <u>6/6/99</u>		
PI: <u>All, Kirshner, Maldavi</u>						
Number	Object	R. A.	Dec.	L/R	Exp	Comments
1-10	DARK				15m	
11-20	BIAS				0s	
21-30	FLAT				6s	
31-40	BIAS				0s	
41-50	FLAT				12s	
51-55	sky			#57	2s	
56	comp			↑		
57,58	H244	13 23	36 07	#56	2m	
59	comp			↑		
60,61	H244	13 23	36 07	#56	2m	PA = -49°
62	comp			↑		
63	NS866	15 06	55 45	#57	3m	Dust lane
64	comp			↑		
65	sn1999cf	13 33	33 02	#2	15m	PA = 0.0
66	comp			↑		
67,68	sn1999E	13 17	-18 33	#2	20m	PA = 90°
69	comp			↑		
70	Feige 98	14 38	27 7	#52	2m	
71	comp			↑		
72	nepl77.322	12 04	20 15	#59	20m	
73	comp			↑		
74	177.326	12 04	20 13	#59	20m	
75	comp			↑		
76	177.332	12 05	19 27	#59	15m	
77	comp			↑		
78	177.333	12 05	21 04	#59	20m	
79	comp			↑		
80	177.334	12 05	20 18	#59	4m	
81	comp			↑		
82	177.337	12 05	19 17	#59	20m	

60 inch Telescope Log

Observer: GALIKINSPI: Mahdavi, Kenyon, RinesSpectrograph: FASTGrating: 100LPage: 2401Date: 6/6/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
83	comp			↑		
84	162816m243657	16 28	-24 37	#74	20m	(redo)
85	comp			↑		
86	ROXR1m38	16 27	-24 18	#74	5m	
87	comp			↑		
88	ROXR1m48	16 27	-24 32	#74	10m	
89	comp			↑		
90	ROXR1m5	16 25	-24 26	#74	20m	(very faint) redo?
91	comp			↑		
92	ROXR1m51	16 27	-24 39	#74	12m	
93	comp			↑		
94	ROXR1m55	16 28	-24 49	#74	15m	
95	comp			↑		
96	ROXR1m7	16 25	-24 37	#74	17m	
97	comp			↑		
98	ROXR1m8	16 25	-24 39	#74	10m	← last of #74F
99	comp			↑		
100	a2199c.113	16 39	42 11	#64	3m	
101	comp			↑		
102	.114	16 39	37 30	#64	8m	bright star east
103	comp			↑		
104	.115	16 39	35 55	#64	10m	
105	comp			↑		
106	.116	16 39	36 54	#64	4m	
107	comp			↑		
108	.117	16 39	38 45	#64	7m	
109	comp			↑		
110	.118	16 40	42 41	#64	5m	
111	comp			↑		
112	.119	16 40	35 59	#64	6m	

60 inch Telescope Log

Observer: CALKINS

PI: Rines, Falco

Spectrograph: FAST

Grating: 300L

Page: 7402

Date: 6/6/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
113	comp			↑		
114	.120	16 40	37 02	#84	3.5m	
115	comp			↑		
116	17192m0045	17 21	-00 47	#84	8m	
117	comp			↑		
118	17211p5910	17 21	59 06	#84	12m	gal east
119	comp			↑		
120	17223p6213	17 22	62 09	#84	10m	
121	comp			↑		
122	17231p5656	17 24	56 54	#84	2.5m	
123	comp			↑		
124	17235p4203	17 25	42 00	#84	8m	
125	comp			↑		
126	17246p5852	17 25	58 49	#84	90s	
127	comp			↑		
128	17244p1357	17 26	15 25	#84	3m	
129	comp			↑		
130	17248p1627	17 27	16 24	#84	30s	e-stellar super ^{nov}
131	comp			↑		
132	17259p4458	17 27	44 55	#84	6m	
133	comp			↑		
134	17266p5835	17 27	58 30	#84	90s	bright gal east
135	comp			↑		
136	17276p5736	17 28	57 22	#84	5m	
137	comp			↑		
138	17272p2455	17 29	24 52	#84	1m	
139	comp			↑		
140	17298p5623	17 30	56 21	#84	3m	
141	comp			↑		
142	17365p6804	17 36	68 03	#84	4m	

130 superposed star - could bin by 2 and/or change PA

PERRY observed 7/13/97 for #1 (Hubble) - hoem

60 Inch Telescope Log

Spectrograph: FAST

Observer: CALKINS

Grating: 300L

Page: 7403

PI: FAKCO, All

Date: 6/6/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
143	comp			↑		
144, 145	HD 192281	20 12	40 15	#56	65	
146	comp			↑		
147-156	BIAS				05	
157-166	FLAT				65	
167-176	BIAS				05	
177-186	FLAT				125	
187-196	DARK				15m	

60 inch Telescope Log

Observer: PBerlind

PI: Betsy

Spectrograph: FAST

Grating: 300R

Date: 6/7/99

Page: 7404

Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				15m	
11-20	BIAS				0s	
21-30	FLAT				7s	Clear skies!
31-40	BIAS				0s	
41-50	FLAT				14s	
51-55	SKY	Zenith			1s	
56	WMP				5s	
57-58	Forn 34	10:30	+43	56	90s	PA=160
59	WMP			↑		
60	N3579	10:30	+12	57	90s	
61	WMP			↑	10s	
62	ngc 110.167	11:	+10	59	4m	
63	WMP			↑		
64	.170	11:05	+11:04	59	4m	
65	WMP			↑		
66	.171	11:05	+11:11	59	12m	
67	WMP			↑		
68	ngc 1152	11:40	+1743	73	8m	
69	WMP			↑		
70	-153	11:40	+1745	73	8m	
71	WMP			↑		
72	-114	10:50	+10:44	73	15m	
73	WMP			↑		
74	-116	10:50	+10:45	73	12m	
75	WMP			↑		
76	-118	10:51	+14:01	73	15m	
77	WMP			↑		
78	-119	10:51	+17:56	73	10m	
79	WMP			↑		
80						

[Handwritten scribbles]

60 inch Telescope Log

Observer: PB

PI: Betsy

Spectrograph: FAST

Grating: 300R

Page: MOS

Date: 6/7/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
80	H244	13:36	+76	56	2m	PA=98 tilt=6100
81	COMP			↑		shutter open? COMP BAD
82	H244	"	"	56	2m	tilt=585!
83	COMP			↑		extra blue
84,86	SN1999cl	12:31	+14:25	2	10m	PA=59 ↓
85,87	COMP			↑		highly extinguished; little blue
88	SN1999cm	15:41	+61:07	2	20m	PA=0 tilt=610 good one
89	COMP			↑		
90	royal 291-292	13:35	+10:41	73	20m	PA=17 E ← p → W 292 291 row=91 row=71
91	COMP			↑		
92	royal 266	13:01	+27:53	73	8m	
93	COMP			↑		
94	267	13:01	+27:50	73	8m	
95	COMP			↑		
96	281	13:24	+36:22	73	8m	
97	COMP			↑		
98	282	13:25	+36:26	73	20m	
99	COMP			↑		
100	283	13:25	+36:23	73	8m	
101	COMP			↑		
102	299	13:47	+33:53	73	20m	
103	COMP			↑		
104	300	13:47	+33:52	73	15m	
105	COMP			↑		
106	323	13:58	+37:27	73	7m	
107	COMP			↑		
108	324	13:58	+37:25	73	9m	
109	COMP			↑		

BAD COMP →

USED FILE 79 AS COMP FOR FILE 80
(VELOCITY SHOULDN'T MATTER)

60 inch Telescope Log

Observer: PB
 PI: Betsy

Spectrograph: FAST
 Grating: 3WL
 Date: 6/7/99

Page: 7406

Number	Object	R. A.	Dec.	L/R	Exp	Comments
110	SN1999ac	16:07	+07:58	Z	20m	PA=48
111	OMP			r		
112	NGC 402	14:51	+43:38	73	15m	
113	OMP			r		
114	403	14:52	+43:43	73	20m	
115	OMP			r		
116	437	15:26	+41:40	73	8m	
117	OMP			r		
118	438	15:26	+41:40	73	8m	
119	OMP			r		
120	ZM17359.0	17:31	+18:40	68	12m	A's for Zmass... delay
121	OMP			r		
122	ZM173202.5	17:32	+17:56	68	10m	
123	OMP			r		
124	ZM173215.7	17:32	+17:06	68	10m	+ to E
125	OMP			r		
126	ZM173332.2	17:33	+17:34	68	15m	
127	OMP			r		
128	ZM173638.4	17:36	+22:05	68	12m	
129	OMP			r		
130	ZM173750.8	17:37	+22:41	68	10m 7m	
131	OMP			r		
132	ZM174804.5	17:44	+23:43	68	5m	wh hck.
133	OMP			r		
134-143	BIAS				0s	Saurabh does not want flats @ blue tilt.
144-153	FLAT				7s	
154-163	BIAS				0s	
164-173	FLAT				14s	Clear @ Dawn
174-183	DARK				15m	

60 inch Telescope Log

Observer: P Berlin

PI: And: 4 Betg

Spectrograph: FAST

Grating: 300L

Date: 6/8/99

Page: 7407

Number	Object	R. A.	Dec.	L/R	Exp	Comments
10	DARK				15m	
11-20	BIAS				0s	crystal clear skies
21-30	FLAT				7s	
31-40	BIAS				0s	
41-50	FLAT				14s	
51-55	sky	zenith		S4	2s	
56	COMP			f		
57-58	Foap 34	10:36	+43:21	S6	90s	PA=100
59	COMP			f		
60	N3577	10:45	+17:58	S7	2m	
61	COMP			f		
62	5526164.189	11:20	-07:18	S9	4m	* to W
63	COMP			f		
64	.205	11:22	-07:39	S9	2m	
65	COMP			f		
66	.212	11:22	-07:40	S9	2m	
67	COMP			f		
68	.221	11:23	-07:46	S9	4m	
69	COMP			f		
70	.220	11:23	-08:06	S9	2m	
71	COMP			f		
72-74	SN1999by	09:21	+51:60	2	10m	PA=90
75,75	COMP			f		
76	naqal-120	10:51	+43:42	73	8m	
77	COMP			f		
78	121	10:51	+43:45	73	15m	
79	COMP			f		
80	98-100	10:13	+18:07	73	20m	PA=86
81	COMP			f		100 row 101 98 @ row 34

60 inch Telescope Log

Observer: PB

PI: Betsy

Spectrograph: FAST

Grating: 300L

Date: 6/8/99

Page: 7408

Number	Object	R.A.	Dec.	L/R	Exp	Comments
82	NGC 124-125	11:07	+18:25	73	15m	PA=58
83	COMP			↑		50 125 row 124 row
84,86 85,87	SN 1999cl COMP	12:31	+14:25	2	12m	PA=58 tilt=585 blue tilt ↓
88	H244	13:21	+36	56	2m	PA=90 ↓
89	COMP			↑		
90	H244	"	"	56	2m	tilt=60 ↓
91	COMP			↑		
92	NGC 173	11:45	+19:58	73	10m	
93	COMP			↑		
94	176	11:45	+19:58	73	20m	extended cm.
95	COMP			↑		
96	206	12:05	+17:53	73	12m	
97	COMP			↑		
98	314	13:57	+12:01	73	8m	
99	COMP			↑		
100	315	13:57	+11:59	73	12m	
101	COMP			↑		
102	316	13:57	+11:58	73	20m	
103	COMP			↑		
104	343	14:09	+12:42	73	15m	nice one
105	COMP			↑		
106	355-356	14:17	+36:24	73	12m	PA=67 50 356 row 111 355 row 81
107	COMP			↑		
108	365-366	14:23	+35:16	73	12m	PA=60 50 365 row 105 366 row 55
109	COMP			↑		
110	361	14:21	+35:16	73	10m	
111	COMP			↑		

60 inch Telescope Log

Observer: PB
 PI: Betsy & Huchra

Spectrograph: FAST
 Grating: 300L
 Date: 6/8/99

Page: 7409

Number	Object	R. A.	Dec.	L/R	Exp	Comments
112	110gal-362	14.21	+78.12	73	8m	
113	COMP			f		
114	412	14.59	+13.12	73	15m	
115	COMP			f		
116	413	14.59	+13.13	73	15m	
117	COMP			f		
118	409	14.57	+19.41	73	10m	
119	COMP			f		
120	411	14.57	+19.40	73	10m	
121	COMP			f		
122	ZM170330.0	17.00	+11.10	68	3m	
123	COMP			f		
124	ZM110055.6	17.00	+37.56	68	4m	
125	COMP			f		
126	ZM170235.7	17.02	+40.29	68	3m	
127	COMP			f		
128	ZM17030.3	17.03	+74.28	68	4m	
129	COMP			f		
130	ZM170304.6	17.03	+29.52	68	3m	
131	COMP			f		
132	ZM170302.0	17.03	+31.17	68	4m	
133	COMP			f		
134	ZM170308.7	17.03	+76.10	68	3m	
135	COMP			f		
136	ZM170315.4	17.03	+38.39	68	3m	
137	COMP			f		
138	ZM170335.0	17.03	+35.38	68	3m	
139	COMP			f		
140	ZM170340.0	17.03	+56.15	68	3m	
141	COMP			f		

140 - Superspeed star - got 2 possible velocities, one of which is stellar

60 inch Telescope Log

Observer: PB

PI: Huchwa

Spectrograph: FAST

Grating: 3002

Date: 6/8/99

Page: 7110

Number	Object	R.A.	Dec.	L/R	Exp	Comments
142	ZM170343.2	17:03	+38:26	68	3m	
143	WMP			f		
144	ZM170343.2	17:03	+41:33	68	3m	
145	WMP			f		
146	ZM170432.2	17:04	+37:57	68	4m	
147	WMP			f		
148	ZM170356.6	17:03	+41:33	68	3m	* to W
149	WMP			f		
150	ZM170418.2	17:04	+38:51	68	3m	
151	WMP			f		
152	ZM170450.4	17:04	+41:53	68	3m	
153	WMP			f		
154	ZM170453.5	17:04	+40:29	68	3m	
155	WMP			f		
156	ZM170528.1	17:05	+41:49	68	3m	
157	WMP			f		
158	ZM170605.7	17:06	+40:04	68	3m	
159	WMP			f		
160	ZM170625.3	17:06	+39:12	68	3m	
161	WMP			f		
162	ZM170627.2	17:06	+39:30	68	3m	
163	WMP			f		
164	ZM170629.2	17:06	+33:03	68	3m	
165	WMP			f		
166	ZM170639.3	17:06	+39:32	68	3m	
167	WMP			f		
168	ZM170706.1	17:07	+35:38	68	3m	
169	WMP			f		
170	ZM170800.5	17:08	+36:70	68	3m	
171	WMP			f		

60 inch Telescope Log		Spectrograph: <u>FAST</u>				Page: <u>7412</u>
Observer: <u>P. Berlin</u>		Grating: <u>300R</u>				Date: <u>6/9/99</u>
PI: <u>Andi</u>						
Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				15s	clear skies!
11-20	BIAS				0s	
21-30	FLAT				7s	
31-40	BIAS				0s	
41-50	FLAT				14s	
51-55	sky	Zenth			2s	
56	COMP				5s	
57-58	Fery 31	10:36	-47:21	S6	90s	PA = 110
59	COMP			↑		
60	N 3379	10:45	-47:50	S7	90s	
61	COMP			↑		
62	SS 26164.216	11:22	-07:52	S9	3m	
63	COMP			↑		
64	.218	11:23	-08:10	S9	4m	underexposed
65	COMP			↑		
66	.222	11:23	-07:39	S9	5m	
67	COMP			↑		
68	.223	11:23	-08:40	S9	5m	
69	COMP			↑		
70	.230	11:23	-07:38	S9	6m	
71	COMP			↑		
72	.247	11:24	-07:38	S9	5m	underexposed
73	COMP			↑		
74	.245	11:24	-08:49	S9	8m	
75	COMP			↑		
76	.244	11:24	-07:41	S9	4m	
77	COMP			↑		
78	.241	11:24	-08:20	S9	2m	
79	COMP			↑		

60 inch Telescope Log
 Observer: PB
 PI: Justin Deby
 Spectrograph: FAST
 Grating: 300
 Date: 6/9/99
 Page: 7413

Number	Object	R.A.	Dec.	L/R	Exp	Comments
80	SS164.227	11:29	-08:39	59	2m	
81	COMP			↑		
82	A1644-04	12:51	-17:58	81	4m	
83	COMP			↑		
84	-02	12:48	-17:52	81	10m	
85	COMP			↑		
86	-05	12:55	-17:45	81	4m	+ to E
87	COMP			↑		
88	-09	12:55	-17:48	81	15m	
89	COMP			↑		
90,92	SN1999cl	12:31	+4:25	2	10m	tilt=585 PA=56
91,93	COMP			↑		↓ PA=93
94	H244	13:21	+36	56	2m	
95	COMP			↑		
96	H244	13:21	+36	56	2m	tilt=610 ↓
97	COMP			↑		
98	noqa (MP)	11:48	+12:42	73	15m	
99	COMP			↑		
100	-178	11:48	+12:43	73	12m	
101	COMP			↑		
102	-194	11:57	+12:52	73	10m	
103	COMP			↑		
104	-197	11:58	+12:52	73	10m	
105	COMP			↑		
106	SN1999cf	13:33	+33:03	2	20m	PA=80
107	COMP			↑		
108	noqa (381)	14:35	+36:32	73	8m	
109	COMP			↑		

60 inch Telescope Log				Spectrograph: <u>FAST</u>		Page: <u>7414</u>
Observer: <u>PB</u>				Grating: <u>300</u>		
PI: <u>Gailler</u>				Date: <u>6/6/99</u>		
Number	Object	R.A.	Dec.	L/R	Exp	Comments
110	<u>NGC 382</u>	<u>14:36</u>	<u>+76:30</u>	<u>73</u>	<u>9m</u>	
111	<u>COMP</u>			<u>f</u>		
112	<u>-389-390</u>	<u>14:45.</u>	<u>+78:45</u>	<u>73</u>	<u>12m</u>	<u>PA=82</u> <u>0 0</u>
113	<u>COMP</u>			<u>f</u>		<u>390 from 101</u> <u>389 @ 1m 45</u>
114	<u>G2199c.046</u>	<u>16:16</u>	<u>+40:20</u>	<u>64</u>	<u>10m</u>	
115	<u>COMP</u>			<u>f</u>		
116	<u>.124</u>	<u>16:40</u>	<u>+76:57</u>	<u>64</u>	<u>5m</u>	
117	<u>COMP</u>			<u>f</u>		
118	<u>.122</u>	<u>16:40</u>	<u>+77:54</u>	<u>64</u>	<u>5m</u>	
119	<u>COMP</u>			<u>f</u>		
120	<u>.124</u>	<u>16:41</u>	<u>+40:15</u>	<u>64</u>	<u>4m</u>	<u>+ to E</u>
121	<u>COMP</u>			<u>f</u>		
122	<u>.125</u>	<u>16:41</u>	<u>+42:34</u>	<u>64</u>	<u>4m</u>	
123	<u>COMP</u>			<u>f</u>		
124	<u>.126</u>	<u>16:41</u>	<u>+38:49</u>	<u>64</u>	<u>4m</u>	
125	<u>COMP</u>			<u>f</u>		
126	<u>.127</u>	<u>16:41</u>	<u>+39:17</u>	<u>64</u>	<u>7m</u>	<u>am</u>
127	<u>COMP</u>			<u>f</u>		
128	<u>.129</u>	<u>16:41</u>	<u>+38:16</u>	<u>64</u>	<u>5m</u>	
129	<u>COMP</u>			<u>f</u>		
130	<u>SN1999c</u>	<u>16:02</u>	<u>+37:21</u>	<u>2</u>	<u>20m</u>	<u>PA=90</u>
131	<u>COMP</u>			<u>f</u>		
132	<u>.130</u>	<u>16:41</u>	<u>+35:51</u>	<u>64</u>	<u>5m</u>	
133	<u>COMP</u>			<u>f</u>		
134	<u>.131</u>	<u>16:41</u>	<u>+37:31</u>	<u>64</u>	<u>5m</u>	
135	<u>COMP</u>			<u>f</u>		
136	<u>.132</u>	<u>16:41</u>	<u>+37:41</u>	<u>64</u>	<u>5m</u>	
137	<u>COMP</u>			<u>f</u>		
138	<u>.138</u>	<u>16:44</u>	<u>+43:20</u>	<u>64</u>	<u>8m</u>	
139	<u>COMP</u>			<u>f</u>		

60 inch Telescope Log

Observer: PB
 PI: Gretter

Spectrograph: FAST
 Grating: 300L
 Date: 6/9/99

Page: 7415

Number	Object	R.A.	Dec.	L/R	Exp	Comments
140	a2199c133	16:42	+76:41	64	4m	
141	WMP			f		
142	.134	16:42	+40:10	64	4m	
143	WMP			f		
144	.136	16:42	+38:09	64	5m	
145	WMP			f		
146	.137	16:43	+42:59	64	5m	
147	WMP			f		
148	.139	16:44	+37:26	64	5m	
149	WMP			f		
150	.140	16:44	+76:18	64	5m	
151	WMP			f		
152	.141	16:44	+40:24	64	7m	
153	WMP			f		
154	.142	16:44	+40:05	64	5m	
155	WMP			f		
156	.143	16:44	+37:39	64	6m	
157	WMP			f		
158	.144	16:45	+45:23	64	5m	
159	WMP			f		
160	.145	16:45	+35:35	64	6m	
161	WMP			f		
162	.146	16:45	+42:18	64	7m	
163	WMP			f		
164	.147	16:45	+38:38	64	8m	
165	WMP			f		
166	.149	16:45	+34:59	64	12m	
167	WMP			f		
168	.148	16:45	+37:59	64	5m	
169	WMP			f		

60 inch Telescope Log
 Observer: PB
 PI: Gaeller.
 Spectrograph: FAST
 Grating: 300L
 Date: 6/9/99
 Page: 74/6

Number	Object	R.A.	Dec.	L/R	Exp	Comments
170	α2199c.150	16:46	+47:40	64	6m	wk
171	COMP			↑		
172	.151	16:46	+47:47	64	4m	
173	COMP			↑		
174	.152	16:46	+47:53	64	6m	
175	COMP			↑		
176	.163	16:49	+48:56	64	4m	
177	COMP			↑		
178	.164	16:49	+48:53	64	4m	
179	COMP			↑		clear & dark
180-182	HDI97291	20:10	+10:07	56	5s	~
183	COMP			↑		
184-193	BIAS				0s	
194-203	FLAT				7s	
204-213	BIAS				0s	
214-223	FLAT				14s	
224-233	FLAT				20s	blue tilt = S&S
234-243	DARK				15m	

60 inch Telescope Log
 Observer: CALKINS
 PI: AN, Kirshner, Tustin, Pines
 Spectrograph: FAST
 Grating: 300L
 Date: 6/10/99
 Page: 7417

Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-3	DARK				15m	
4-13	BSAS				0s	
14-23	FLAT				6s	
24-33	BSAS				0s	
34-43	FLAT				12s	
44	H244	13 21	36 23	#56	2m	
45	comp			↑		
46	H244	13 21	36 23	#56	2m	PA=0°
47	comp			↑		
48	sn1999by	9 21	51 00	#2	15m	PA=90°
49	comp			↑		
50, 51	sn1999cl	12 32	14 25	#2	10m	PA=45°, Tilt=585
52	comp			↑		
53	H244	13 23	36 08	#56	2m	PA=105°, Tilt=585
54	comp			↑		
55	A1644_01	12 58	-17 08	#81	20m	clouds!
56	comp			↑		
57	A1644_03	12 55	-17 19	#81	20m	
58	comp			↑		
59	A1644_06	12 57	-17 53	#81	17m	Red
60	comp			↑		
61	A1644_07	12 57	-17 03	#81	20m	
62	comp			↑		
63	A1644_08	12 57	-17 07	#81	17m	
64	comp			↑		
65	sn1999cm	15 11	61 07	#2	20m	gal "east", PA=-24
66	comp			↑		
67	z199c.153	16 42	40 45	#64	5m	PA=110
68	comp			↑		
69	z199c.154	16 46	39 10	#64	7m	

60 inch Telescope log
 Observer: COLLEINS
 PI: Ramesh, Huchra
 Spectrograph: FAST
 Grating: 300L
 Date: 6/10/99
 Page: 7418

Number	Object	R.A.	Dec.	L/R	Exp	Comments
70	comp			↑		
71	a2199c.155	16 46	45 25	*64	20m	object west
72	comp			↑		
73	a2199c.156	16 47	37 25	*64	7m	star west
74	comp			↑		
75	a2199c.157	16 47	38 39	*64	6m	
76	comp			↑		
77	a2199c.158	16 47	42 39	*64	7m	
78	comp			↑		
79	a2199c.159	16 48	39 30	*64	20m	
80	comp			↑		
81	a2199c.160	16 48	39 38	*64	4m	
82	comp			↑		
83	a2199c.161	16 48	39 54	*64	10m	
84	comp			↑		
85	a2199c.162	16 48	40 01	*64	4m	
86	comp			↑		
87	2M180003	18 00	12 58	*68	5m	central spectra
88	comp			↑		
89	2M180022	18 00	12 26	*68	6m	
90	comp			↑		
91	2M180044	18 00	14 02	*68	8m	
92	comp			↑		
93	2M180149	18 01	33 24	*68	3m	bright star east
94	comp			↑		
95	2M180349	18 03	40 14	*68	10m	
96	comp			↑		
97	2M180413	18 04	30 36	*68	7m	PA=69°
98	comp			↑		
99	2M180453	18 04	39 40	*68	4m	

60 inch Telescope Log

Spectrograph: FAST

Observer: CALYSA

Grating: 3006

Page: 7/19

PI: Huchra, Falco

Date: 6/10/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
100	comp			↑		
101	ZM180517	18 05	30 46	"68	6m	
102	comp			↑		
103	ZM180607	18 06	22 38	"68	5m	
104	comp			↑		
105	ZM180611	18 06	21 20	"68	5m	
106	comp			↑		
107	ZM180656	18 06	30 14	"68	6m	
108	comp			↑		
109	ZM180659	18 07	30 16	"68	4m	star west
110	comp			↑		
111	ZM180910	18 09	30 19	"68	2.5m	
112	comp			↑		
113	18462p5020	18 47	50 23	"84F	2.5m	
114	comp			↑		
115	18588p2842	19 00	28 46	"84F	3m	
116	comp			↑		
117	19007p2714	19 02	27 18	"84F	10m	central spectra
118	comp			↑		
119	N6783-15.4	19 16	46 01	"84F	2.5m	object east
120	comp			↑		
121	19185p3044	19 20	30 49	"84F	5m	
122	comp			↑		
123	19269p6512	19 27	65 18	"84F	15m	object west
124	comp			↑		
125	19305p7200	19 29	72 06	"84F	3.5m	PA = 69°
126	comp			↑		
127	19310p3746	19 32	37 52	"84	3m	PA = 90°
128	comp			↑		
129	20264p2533	20 28	25 43	"84	2m	

60 inch Telescope Log

Spectrograph: FAST

Observer: CALISTO

Grating: 3000L

Page: 7420

PI: FALCO, All

Date: 6/10/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
130	comp			↑		
131	2002p0959	20 22	09 09	#84	2m	
132	comp			↑		
133	2002p0144	20 02	01 52	#84	2m	
134	comp			↑		
135	2024m0225	20 26	02 16	#84	1m	stellar?
136	comp			↑		
137	N7331	22 37	34 25	#57	3m	
138	comp			↑		
139, 140	BDp284211	21 51	28 51	#56	20s	
141	comp			↑		
142-146	sky			#57	2s	
147	comp			↑		
148-157	BIAS				0s	
158-167	FLAT				6s	
168-177	BIAS				0s	
178-187	FLAT				12s	
188-197	DARK				15m	

135 superposed star

60 inch Telescope Log

Observer: CALKINS

PI: All, Kirshner, Barton

Spectrograph: FAST

Grating: 3006

Date: 6/11/99

Page: 7421

Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				15m	
11-20	BIAS				0s	
21-30	FLAT				12s	
31-40	BIAS				0s	
41-50	FLAT				6s	
51-55	sky			#57	2s	
56	comp			↑		
57,58	H244	13 23	36 08	#56	2m	
59	comp			↑		
60,61	H244	13 23	36 08	#56	2m	PA = 0°
62	comp			↑		
63,64	H244	13 23	36 08	#56	2m	PA = 0°, tilt = 585°
65	comp			↑		
66	sn1999cl	12 32	14 25	#2	10m	PA = 35°, tilt = 585°
67	comp			↑		
68	ngc1-107	10 24	13 34	#73	15m	
69	comp			↑		
70	ngc1-110	10 43	12 05	#73	15m	
71	comp			↑		
72	ngc1-111	10 43	12 03	#73	20m	
73	comp			↑		
74	ngc1-163	11 43	19 44	#73	20m	
75	comp			↑		
76	ngc1-165	11 43	19 46	#73	17m	
77	comp			↑		
78	ngc1-179	11 48	12 43	#73	20m	gal west
79	comp			↑		
80	ngc1-180	11 48	12 42	#73	20m	
81	comp			↑		
82	ngc1-187	11 56	32 02	#73	20m	

60 inch Telescope Log

Observer: CARINA

PI: BARTON, Kirchner, Rines, Falco

Spectrograph: FAST

Grating: 300L

Page: 7422

Date: 6/11/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
83	comp			↑		
84	ngc 188	11 56	32 01	#73	8m	
85	comp			↑		
86	ngc 196	11 57	25 08	#73	10m	
87	comp			↑		
88	ngc 198	11 58	25 07	#73	8m	
89	comp			↑		
90	sn 1999cc	16 02	37 21	#2	15m	gal "west"
91	comp			↑		
92	a2199c.128	16 41	37 13	#64F	20m	
93	comp			↑		
94	a2199c.135	16 42	37 25	#64F	20m	
95	comp			↑		
96	a2199.25713	16 19	38 00	#64	17m	gal west
97	comp			↑		
98	1726p5129	17 30	51 25	#84F	4m	
99	comp			↑		
100	17305p5646	17 31	56 44	#84F	2.5m	
101	comp			↑		
102	17294p0631	17 31	6 30	#84F	4m	
103	comp			↑		
104	17294p0631	17 31	6 29	#84F	5.5m	
105	comp			↑		
106	17299p2827	17 31	28 24	#84F	8m	bright star west
107	comp			↑		(gal superimposed on star spectra)
108	17295p0630	17 31	06 23	#84F	10m	
109	comp			↑		
110	17295p0634	17 31	6 32	#84F	15m	
111	comp			↑		
112	17337p5047	17 34	50 45	#84F	4m	

60 inch Telescope Log

Spectrograph: FAST

Observer: CALKINS

Grating: 300L

Page: 7423

PI: FALCO, Huchra, Kenyon

Date: 6/11/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
113	comp			↑		
114	17348p6326	17 35	63 23	#84F	15m	
115	comp			↑		
116	17363p6805	17 36	68 03	#84F	3m	
117	comp			↑		
118	17373p7057	17 36	70 54	#84F	6m	
119	comp			↑		
120	17385p7000	17 37	69 58	#84F	6m	
121	comp			↑		
122	17360p5502	17 36	55 00	#84F	5m	
123	comp			↑		
124	17360p5415	17 36	54 13	#84F	6m	
125	comp			↑		
126	17341p1900	17 36	18 58	#84F	10m	
127	comp			↑		
128	2M203357	20 33	16 09	#68	3m	
129	comp			↑		
130	2M203506	20 35	14 46	#68	3.5m	
131	comp			↑		
132	2M204331	20 43	15 07	#68	3m	
133	comp			↑		
134	2M204753	20 47	17 57	#68	2.5m	
135	comp			↑		
136	2M204937	20 49	16 38	#68	4.5m	
137	comp			↑		
138-140	2And	23 33	48 48	#12	3, 10, 60	
141	comp			↑		
142-144	AG Per	21 51	12 36	#12	1, 10, 30	
145	comp			↑		
146	2M205210	20 52	15 29	#68	3m	

60 inch Telescope Log		Spectrograph: <u>FAST</u>		Page: <u>7425</u>		
Observer: <u>CALVIN</u>		Grating: <u>300L</u>		Date: <u>6/12/99</u>		
PI: <u>All, Kirsbaum, Justin</u>						
Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				15m	
11-20	BEAS				0s	
21-30	FLAT				6s	
31-40	NEAS				0s	
41-50	FLAT				12s	
51-55	sky			#57	2s	
56	comp			↑		
57, 58	H244	13 23	36 08	#56	2m	
59	comp			↑		
60, 61	H244	13 23	36 07	#56	2m	PA = 0°
62	comp			↑		
63	N3379	10 47	12 35	#57	1m	
64	comp			↑		
65	sn1999by	9 21	51 00	#2	15m	PA = 84°, star east
66	comp			↑		
67	A1644-11	12 56	-17 03	#81	20m	
68	comp			↑		
69	A1644-12	12 55	-17 05	#81	20m	
70	comp			↑		
71	A1644-13	12 57	-17 22	#81	20m	
72	comp			↑		
73	A1644-14	12 57	-18 00	#81	20m	too faint ^{emission!} for a red!!
74	comp			↑		
75	A1644-15	12 59	-17 04	#81	15m	Superposed star
76	comp			↑		
77	A1644-16	12 59	-17 39	#81	20m	
78	comp			↑		
79	A1644-18	12 59	-17 32	#81	12m	2 STARS
80	comp			↑		
81	A1644-20	12 55	-17 17	#81	20m	PA = 30°

75 Superposed star - obj beneath too dim

60 inch Telescope Log

Spectrograph: FAST

Observer: CALKINS

Grating: 300L

Page: 7426

PI: Justin Geller, Anshra

Date: 6/12/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
82	comp			↑		
83	2199.273491	16 23	41 26	#64	10m	PA=90°
84	comp			↑		
85	2199.275015	16 26	41 20	#64	11m	
86	comp			↑		
87	2199.275898	16 27	41 29	#64	7m	
88	comp			↑		
89	2199.277639	16 30	41 29	#64	15m	
90	comp			↑		
91	2199.278197	16 30	41 24	#64	15m	PA=110°
92	comp			↑		
93	2199.286047	16 18	38 46	#64	12m	
94	comp			↑		
95	2199.290117	16 21	41 10	#64	10m	
96	comp			↑		
97	2199.290845	16 22	41 17	#64	8 m	
98	comp			↑		
99	2199.291651	16 24	41 06	#64	17m	
100	comp			↑		
101	2199.291658	16 24	41 14	#64	15m	seeing degrading
102	comp			↑		
103	2199.291995	16 24	41 08	#64	20m	
104	comp			↑		
105	2199.293656	16 27	41 18	#64	20m	
106	comp			↑		
107	21180947	18 09	38 13	#68	4m	
108	comp			↑		
109	21181153	18 11	36 26	#68	4m	
110	comp			↑		
111	21181216	18 12	39 02	#68	4m	star east

60 inch Telescope Log			Spectrograph: <u>FAST</u>		Page: <u>7427</u>	
Observer: <u>CALKINS</u>			Grating: <u>300L</u>			
PI: <u>Huchra, All</u>			Date: <u>6/12/99</u>			
Number	Object	R.A.	Dec.	L/R	Exp	Comments
112	comp			↑		
113	ZM181251	18 12	33 23	#68	3.5m	
114	comp			↑		
115	ZM181311	18 12	36 03	#68	5m	
116	comp			↑		
117	ZM181334	18 13	15 35	#68	4m	star west
118	comp			↑		
119	ZM181352	18 13	16 39	#68	6m	star east
120	comp			↑		
121	ZM181440	18 14	34 42	#68	4.5m	
122	comp	18:14:41	+33:57:05	↑		moving?
123	ZM181449	18 14	13 26	#68	5m	seeing terrible!!
124	comp			↑		(windy)
125	ZM181507	18 15	41 25	#68	3.5m	star east
126	comp			↑		
127	ZM181552	18 15	36 06	#68	11m	central spectra
128	comp			↑		
129	ZM181553	18 15	33 55	#68	4m	
130	comp			↑		
131	ZM181600	18 15	35 21	#68	3.5m	
132	comp			↑		
133	ZM181649	18 16	41 28	#68	7m	bright star east
134	comp			↑		
135/136	BDp284211	21 51	28 51	#56	30s	
137	comp			↑		
138-147	BIAS				0s	
148-157	FLAT				6s	
158-167	BIAS				0s	
168-177	FLAT				12s	
178-187	DARK				15m	

Fax To: Susan Tokarz
Pg 1 of 1

60 inch Telescope Log

Observer: P Berlin

PI: Kirshner

Spectrograph: FAST

Grating: 3002

Date: 6/13/99

Page: 7428

Number	Object	R.A.	Dec.	L/R	Exp	Comments
140	DARK				6s	2720 X 256
11-20	BIBS				0s	
21-30	FLAT				7s	
31-40	BIBS				0s	cloudy, strong wind
41-50	FLAT				14s	
51-60	FLAT blue				20s	filt = S85
61-63	SN1999cl	2:31	+4:25	Z	15m	PA = 49
62,64	COMP			r		
65	H244	13:21	+3623	S6	3m	
66	COMP			r		
67	A1644-28	12:59	+1653	81	20m	filt = G10 ↓ gal to E.
68	COMP			r		
69	25	12:57	+1714	81	20m	
70	COMP			r		
71	Q2199.28635	16:31	+4118	69	15m	try again - poor seeing
72	COMP			r		close - high wind
73-82	BIBS				0s	
83-92	FLAT				7s	
93-102	BIBS				0s	
103-112	FLAT				14s	

Fax to: Susan Tokarz
Pg 1 of 3

60 inch Telescope Log
 Observer: P. Berlind
 PI: Andi
 Spectrograph: FAST
 Grating: 300R
 Date: 6/14/99
 Page: 7429

Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				5m	
11-20	BIAS				0s	scattered clouds
21-30	FLAT				7s	windy
31-40	BIAS				0s	
41-50	FLAT				14s	
51-55	sky			S9	2s	
56	COMP			↑	5s	
57	H214			S6	2m	
58	COMP			↑		
59	N3377	10:15	+11:14	S7	2m	
60	COMP			↑		
61	mgsl10.165	11:02	+10:30	S9	5s	Velocity based on Na line
62	COMP			↑		
63	.174	11:14	-07:49	S9	5m	
64	COMP			↑		
65	.173	11:18	-07:48	S9	6m	
66	COMP			↑		
67	.178	11:19	-08:30	S9	7m	
68	COMP			↑		
69	.163	11:20	-08:07	S9	5m	
70	COMP			↑		
71	.184	11:20	-08:02	S9	5m	
72	COMP			↑		
73	.186	11:20	-08:02	S9	3m	
74	COMP			↑		
75	.190	11:20	-07:19	S9	7m	
76	COMP			↑		
77	.200	11:22	-07:59	S9	8m	
78	COMP			↑		

60 inch Telescope Log

Observer: PB
 PI: Tustiny Mahdavi & Geller

Spectrograph: FAST
 Grating: 300L
 Date: 6/14/99

Page: 7430

Number	Object	R.A.	Dec.	L/R	Exp	Comments
79	A1644-25	12:57	-17:05	81	20m	
80	COMP			↑		
81	-29	12:59	-17:11	81	20m	
82	COMP			↑		
83	-35	12:56	-17:06	81	20m	X this sample of galaxies is too faint.
84	COMP			↑		(these were the "bright ones")
85	Mrqb 172379	12:07	+20:31	59	8m	
86	COMP			↑		
87	377	12:07	+19:39	59	12m	underexposed
88	COMP			↑		
89	369	12:06	+19:31	59	20m	
90	COMP			↑		
91	SNmpc 5981	15:57	+59:23	2	10m	non-sq
92	COMP			↑		
93	q2199.328513	16:26	+40:45	64	6m	
94	COMP			↑		
95	.331350	16:30	+40:48	64	7m	
96	COMP			↑		
97	.325591	16:21	+40:44	64	9m	
98	COMP			↑		
99	.327817	16:25	+40:46	64	14m	
100	COMP			↑		
101	.311482	16:26	+41:03	64	10m	
102	COMP			↑		
103	.310279	16:25	+40:55	64	15m	
104	COMP			↑		
105	.292862	16:28	+41:08	64	15m	
106	COMP			↑		
107	.291395	16:31	+41:18	64	15m	
108	COMP			↑		

60 inch Telescope Log

Observer: PB
 PI: Gretter

Spectrograph: FAST
 Grating: 3002
 Date: 6/14/99

Page: 7431

Number	Object	R. A.	Dec.	L/R	Exp	Comments
109	a2199.30034	16:38	+38:05	64	12m	
110	COMP			f		
111	.331479	16:31	+40:55	67	7m	
112	COMP			f		
113	.332254	16:32	+40:51	64	15m	
114	COMP			f		
115	.332960	16:34	+40:55	64	12m	
116	COMP			f		
117	.333799	16:35	+40:55	64	12m	
118	COMP			f		
119	.335537	16:36	+40:49	64	15m	
120	COMP			f		
121	.33954	16:33	+37:55	64	12m	
122	COMP			f		
123	.313048	16:22	+40:37	64	15m	
124	COMP			f		
125	.346314	16:29	+40:36	64	15m	
126	COMP			f		
127	.346075	16:28	+40:41	66	12m	
128	COMP			f		
129	.345674	16:27	+40:36	64	10m	
130	COMP			f		
131	.345864	16:28	+40:33	64	12m	
132	COMP			f		
134	.350154	16:36	+40:32	64	8m	
135	COMP			f		
136	BD per 1211	21:48	+28:37	56	30s	clear + cool @ dawn.
137	COMP			f		
138-147	BIAS				0s	
148-157	FLAT				7s	

60 inch Telescope Log			Spectrograph: <u>FAST</u>			
Observer: <u>FALCO</u>			Grating: <u>600</u> 2" slit		Page: <u>1</u>	
PI: <u>Kocha</u>			Date: <u>6/15/99</u>			
Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	BIAS				0	cloudy 3pm
11-21	FOCUS				3	(tilt 6563 f=980 fwhm)
22-32	"				3	(tilt 4800 f=980 fwhm)
33	HeNeAr					
34	FLAT				10	no good
35	DARK				30	
36-42	FLAT				30	
43-53	FOCUS					(6563 R / step 30 f=980)
54	DARK					
55-57	HeNeAr				30	30 too long, 6 fine
58-63	DARK				900	
64-68	Feig 99				10	clouds, too ft.
69	HeNeAr					
70	TEST					
102-113	FOCUS				20	(tilt 4800 f=950) had to shift, red line @ 5852 R
						CLOUDED OUT
						CLOSE 3:15

113 files + 2 ms files

60 inch Telescope Log				Spectrograph: <u>FAST</u>		
Observer: <u>Folio</u>				Grating: <u>600/2"</u>		Page: <u>2</u>
PI: <u>Kocha</u>				Date: <u>6/16/99</u>		
Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	BIAS				0	Expt 6563
11-20	FLAT				30	
21	HeNeAr				6	
22-32	FOCUS					1040 (T ~ 73°F) over
33-43	"					980 (T ~ 65°F)
44	HeNeAr				20	Expt 6900
45-49	DARK				900	
50	HeNeAr				6	
51	Frige HC				30	clouds...
52	Frige HC				60	
53	HeNeAr				6	
54	HeNeAr			30'	6	
55	MF043			30°	900	weak H α REDD
56	MF043			↓	"	clouds i/o ... faint only?
57	HeNeAr			↓	6	clouds all over
58	HeNeAr			2°	6	some breaks
59	MF079			2°	900	hand guide for H α
60	MF079			"	900	
61	HeNeAr					
62	"			88	6	?
63	BD+332642			"	30	
64	HeNeAr			88	6	
65	MF064			88	900	u. ft H α
66	"			88	900	" de 3rd
67	"			88	900	" clouds pink
68	HeNeAr			88	6	
69	"			5	6	
70	MF066			5	900	clouds i/o stop @ IR
71	HeNeAr			45	6	
72	MF083			45	450	u. clear to W - notice

60 inch Telescope Log				Spectrograph: <u>FAST</u>		Page: <u>3</u>
Observer: <u>Falco</u>		Grating: <u>600/2"</u>		Date: <u>6/16/99</u>		
PI: <u>Koch</u>						
Number	Object	R.A.	Dec.	L/R	Exp	Comments
72	MF083			45°	450	
73	HeNeAr			45°	6	
74	"			-43	6	
75	MF097			-43	450	
76	"			"	"	
77	HeNeAr			"	6	
78	"			73	6	
79	MF095			"	450	
80	"			"	"	
81	HeNeAr			"	6	
82	"			67	6	
83	MF098			↓	450	
84	"			↓	"	
85	HeNeAr			↓	6	
86	HeNeAr			40°		
87	HD217086			40°	20	
88	HeNeAr			-85°		
89	MF096			-85°	450	
90	"			"	"	shy? bright REDD
91	HeNeAr			"		
92-94	shy			90	120	too low?
95	HeNeAr					

large file 95 film + 2ms filter

60 inch Telescope Log				Spectrograph: <u>FAST</u>		Page: <u>7432</u>
Observer: <u>CALVIN</u>				Grating: <u>600L</u>		Date: <u>6/17/99</u>
PI: <u>Kirshner, Kochanek</u>						
Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-3	DARK				15m	
4-13	DEAC				0x	
14-23	FLAT				35s	Tilt = 494
24-33	FLAT				35s	Tilt = 585
34	H294	13 23	36 09	#56	2m	PA = -56, Tilt = 585
35	comp			↑	35s	
36	sm1999c1	12 31	14 25	#2	15m	
37	comp			↑	35s	
38	H294	13 23	36 09	#56	2m	Tilt = 494, PA = 90
39	comp			↑	35m	
40, 41	MFO46	13 53	37 52	#88	7.5m	PA = 106
42	comp			↑	35s	
43	MFO41	13 33	17 35	#88	15m	PA = 56
44	comp			↓	35s	
45 46	MFO41	13 33	17 35	#88	15m	
47	comp			↑	35s	
48	HD140716	15 44	32 30	#88	N/A	rate = 3, PA = 90
49	comp			↑	35s	
50, 51	MFO69	15 44	41 07	#88	7.5m	PA = -46
52	comp			↑	35s	
53, 54	MFO78	16 23	37 15	#88	7.5m	PA = -40
55	comp			↑	35s	
56, 57	NGC5846	15 06	01 36	#88	5m	PA = 31
58	comp			↑	35s	
59, 60	MFO68	15 35	30 52	#88	7.5m	PA = 97°
61	comp			↑	35s	
62	comp			↓	35s	
63-65	MFO73	Ka 00	41 28	#88	15m	PA = -44
66	comp			↑	35s	
67	HD183492	19 29	14 36	#88	N/A	Rate = 3, PA = 90

60 inch Telescope Log				Spectrograph: <u>FAST</u>		Page: <u>7433</u>
Observer: <u>CALKINS</u>				Grating: <u>6006</u>		Date: <u>6/17/99</u>
PI: <u>Kochanek</u>						
Number	Object	R.A.	Dec.	L/R	Exp	Comments
68	comp			↑	35s	
69	comp			↓	35s	
70-73	MFO75	16 08	16 47	#88	15m	PA=100° thru clouds
74	comp			↑	35s	(file 70 clouded out)
75	HD162555	17 50	29 19	#88	N/A	rate=3
76	comp			↑	35s	
77	comp			↓	35s	
78-80	MFO83	17 24	23 43	#88	15m	
81	comp			↑	35s	
82	HD156874	17 18	28 49	#88	N/A	rate=3
83	comp			↑	35s	
84	comp			↓	35s	
85, 86	MFO96	22 27	29 05	#88	15m	PA=90, clouds
87	comp			↑	35s	returning
88, 89	NGC7331	22 37	34 24	#88	5m	PA=-9
90	comp			↑	35s	
91	comp			↓	35s	
92, 93	MFO97	22 36	19 22	#88	15m	PA=-43, star "west"
94	comp			↑	35s	
95	BDp284211	21 51	28 51	#56	1m	PA=90°
96	comp			↑	35s	
97	HD183492	19 29	14 35	#88	N/A	rate=3
98	comp			↑		
99-103	sky	zenith		#57	2.2	
104	comp			↑		
105-114	BEAS				0s	
115-124	FLAT				35s	
125-134	DARK				15m	

60 inch Telescope Log

Observer: CALKINS

PI: All, Kitchner, Kochanek

Spectrograph: FAST

Grating: COOL

Page: 2434

Date: 6/18/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				15m	
11-20	BIAS				0s	
21-30	FLAT				35s	
31-35	sky			#57	2s	clouds @ sunset
36	comp			↑	35s	
37	H244	13 23	36 08	#56	2m	300lpm, 3", tilt=610
38	comp			↑	12s	PA=109
39, 40	snr 5468	14 06	-5 26	#2	15m	PA=0, thru clouds
41	comp			↑	12s	
42	H244	13 23	36 08	#56	2m	600lpm, 2", tilt=742
43	comp			↑	35s	
44, 45	MFO41	12 33	17 35	#88	7.5m	PA=58°
46	comp			↑	35s	
47	comp			↓	35s	
48-50	MFO44	13 48	18 21	#88	15m	PA=10°
51	comp			↑	35s	
52	comp			↓	35s	
53, 54	MFO40	13 31	19 59	#88	15m	PA=35°
55	comp			↑	35s	
56	comp			↓	35s	
57-59	MFO60	15 19	25 46	#88	15m	PA=4°, bright star east
60	comp			↑	35s	
61, 62	MFO71	15 54	30 08	#88	7.5m	PA=59
63	comp			↑	35s	
64	comp			↓	35s	
65, 66	MFO54	14 30	40 00	#88	15m	PA=0°
67	comp			↑	35s	
68, 69	MFO77	16 18	35 08	#88	7.5m	PA=45°
70	comp			↑	35s	
71, 72	MFO80	16 32	22 24	#88	7.5m	PA=100°

NO FLATS FOR OBSERVATION AT TILT OF 610
 (STANDARD STAR + SN)
 NOT REDUCED FOR THIS REASON

60 inch Telescope Log

Observer: Calkins

PI: Kochanek

Spectrograph: FAST

Grating: 6000L

Date: 6/17/99

Page: 7435

Number	Object	R. A.	Dec.	L/R	Exp	Comments
73	comp			↑	35s	
74-75	MFC072	15 59	15 10	#88	7.5m	PA = 105°
76	comp			↑	35s	
77	comp			↓	35s	
78-80	MFC078	22 48	24 47	#88	15m	PA = 66°
81	comp			↑	35s	
82	Cyg OB2 no 9	20 33	41 13	#56	20s	PA = 3°
83	comp			↑	25s	
84-85	NGC 7331	22 37	34 24	#88	5m	PA = -9°
86	comp			↑	35s	
87	HD 175743	18 56	18 06	#88	N/A	Rate = 3
88	comp			↑	35s	
89	comp			↓	35s	
90-92	MFC095	22 12	16 24	#88	15m	PA = 73°
93	comp			↑	25s	
94	HD 185194	19 37	16 20	#88	N/A	PA = 90°, rate = 3
95	comp			↑	35s	
96	BDp 284211	21 51	28 52	#56	30s	PA = 90°
97	comp			↑	35s	
98	HD 183492	19 29	14 35	#56	N/A	Rate = 3, PA = 90°
99	comp			↑	35s	
100-104	sky			#57	4s	clear at dawn
105	comp			↑	35s	
106-115	BEAS				0s	
116-125	FLAT				55s	
126-135	DARK				15m	



60 inch Telescope Log		Spectrograph: <u>FAST</u>				Page: <u>7436</u>
Observer: <u>CALKINS</u>		Grating: <u>300L</u>				Date: <u>6/19/99</u>
PI: <u>All, Kirshner, Geller</u>						
Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				15m	
11-20	BIAS				0s	
21-30	FLAT				12s	
31-40	BIAS				0s	
41-50	FLAT				6s	
51,52	H244	13 23	36 08	#56	2m	
53	comp			↑		
54,55	BDp332642	15 51	32 56	#56	2m	PA=105°
56	comp			↑		
57,58	BDp332642	15 51	32 56	#56	2m	PA=105°, Tilt=585
59	comp			↑		
60	sm1999cp	14 06	-5 26	#2	20m	PA=35, Tilt=585
61	comp			↑		
62	a2199.346806	16 29	40 39	#64	20m	seeing comes and goes
63	comp			↑		
64	.347405	16 30	40 35	#64	20m	
65	comp			↑		
66	.349996	16 36	40 42	#64	12m	stellar? yes #
67	comp			↑		
68	.351068	16 38	40 37	#64	8m	
69	comp			↑		
70	.359137	16 24	40 29	#64	10m	
71	comp			↑		
72	.36055	16 32	37 58	#64	15m	
73	comp			↑		
74	.362094	16 29	40 20	#64	20m	
75	comp			↑		
76	.362762	16 31	40 23	#64	15m	
77	comp			↑		
78	.363158	16 31	40 25	#64	15m	

60 inch Telescope Log				Spectrograph: <u>FAST</u>		
Observer: <u>CALVIN</u>				Grating: <u>300L</u>		Page: <u>7457</u>
PI: <u>Geller/Rinetz, Kiehnner, Falco</u>				Date: <u>6/19/99</u>		
Number	Object	R.A.	Dec.	L/R	Exp	Comments
79	comp			↑		
80	.36717	16 25	37 57	#64	20m	seeing worse
81	comp			↑		
82	.3723	16 24	38 47	#64	20m	
83	comp			↑		
84	.373146	16 19	40 11	#64	20m	
85	comp			↑		
86	.374794	16 23	40 08	#64	20m	
87	comp			↑		
88	.374834	16 23	40 12	#64	12m	
89	comp			↑		
90	sn1999c0	21 03	-14 33	#2	20m	PA = 4°, Type II-P?
91	comp			↑		
92	N7331	22 36	34 24	#57	3m	PA = 90°
93	comp			↑		
94	19405p5030	19 41	50 35	#84	2m	
95	comp			↑		
96	19488m0223	19 51	-2 15	#84	4m	star west, sun rising
97	comp			↑		
98,99	BDp28421	21 51	28,51	#56	30s	
100	comp			↑		
101-105	sky			#57	2s	
106	comp			↑		
107-116	BIAS				0s	
117-126	FLAT				6s	
127-136	BIAS				0s	
137-146	FLAT				12s	
147-156	DARK				15m	

60 inch Telescope Log

Observer: CALKINS

PI: All, Kirshner, Geller

Spectrograph: FAST

Grating: 300L

Page: 7438

Date: 6/20/99

Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	PARK				15m	
11-20	BEAS				0s	
21-30	FLAT				6s	
31-40	BEAS				0s	
41-50	FLAT				12s	
51-55	sky			#57	2s	clouds @ sunset
56	comp			↑		
57, 58	H244	13 23	36 08	#56	2m	
59	comp			↑		
60, 61	H244	13 23	36 08	#56	2m	PA = -55
62	comp			↑		
63	sm1999c1	12 32	14 25	#2	15m	PA = 45°
64	comp			↑		
65	22199.37770	16 29	40 14	#64	20m	this circuit
66	comp			↑		
67	.376284	16 26	40 10	#64	20m	
68	comp			↑		
69	.376722	16 27	40 14	#64	20m	
70	comp			↑		
71	.381106	16 26	40 13	#64	8m	
72	comp			↑		
73	.389679	16 22	39 56	#64	8m	
74	comp			↑		
75	.389882	16 23	40 04	#64	12m	
76	comp			↑		
77	.391204	16 26	39 57	#64	10m	
78	comp			↑		
79	.393090	16 30	39 58	#64	8m	
80	comp			↑		
81	.394827	16 34	39 56	#64	20m	not worth a redo!!!

60 inch Telescope Log			Spectrograph: <u>FAST</u>		Page: <u>7159</u>	
Observer: <u>CALKINS</u>			Grating: <u>300L</u>		Date: <u>6/10/99</u>	
PI: <u>Geller</u>						
Number	Object	R. A.	Dec.	L/R	Exp	Comments
82	comp			↑		
83	.40222	16 19	37 35	#64	8m	
84	comp			↑		
85	.40368	16 19	37 37	#64	15m	
86	comp			↑		
87	.40508	16 20	37 35	#64	20m	
88	comp			↑		
89	.40579	16 20	37 44	#64	8m	
90	comp			↑		
91	.41211	16 22	37 36	#64	15m	
92	comp			↑		
93	.41230	16 22	37 43	#64	12m	
94	comp			↑		
95	.41446	16 23	37 43	#64	12m	
96	comp			↑		
97	.418644	16 21	39 33	#64	13m	clouds invading from the north
98	comp			↑		
99	.419089	16 22	39 37	#64	10m	
100	comp			↑		
101	.419157	16 23	39 31	#64	9m	
102	comp			↑		
103	.41932	16 25	37 46	#64	8m	
104	comp			↑		
105	.420027	16 25	39 30	#64	8m	
106	comp			↑		
107	.421310	16 28	39 32	#64	15m	
108	comp			↑		
109	.421811	16 28	39 37	#64	8m	
110	comp			↑		
111	.423399	16 32	39 57	#64	15m	

60 inch Telescope Log				Spectrograph: <u>FAST</u>		Page: <u>7440</u>
Observer: <u>CALKINS</u>				Grating: <u>3006</u>		Date: <u>6/20/99</u>
PI: <u>Huehner, Kirshner, All</u>						
Number	Object	R.A.	Dec.	L/R	Exp	Comments
112	comp			↑		
113	ZM181705	18 17	35 33	#68	20m	*star
114	comp			↑		
115	ZM181742	18 17	14 07	#68	7m	
116	comp			↑		
117	ZM181756	18 17	23 48	#68	2m	object east
118	comp			↑		
119	ZM181814	18 18	34 29	#68	4m	object west
120	comp			↑		
121	SN1996c	21 03	-14 33	#2	20m	object "west" PA=0°
122	comp			↑		
123	ZM181819	18 18	39 01	#68	4.5m	
124	comp			↑		
125	ZM182244	18 22	30 51	#68	5m	
126	comp			↑		
127	ZM182344	18 23	29 56	#68	6m	
128	comp			↑		
129	N7331	22 37	34 24	#57	3m	
130	comp			↑		
131,132	ZDP284211	21 51	28 52	#56	30s	
133	comp			↑		
134-143	BEAS				0s	
144-153	FLAT				6s	
154-163	BEAS				0s	
164-173	FLAT				12s	
174-183	DARK				15m	

60 inch Telescope Log		Spectrograph: <u>FAST</u>				
Observer: <u>CALKINS</u>		Grating: <u>3006</u>		Page: <u>7441</u>		
PI: <u>All Kirshner, Mahdavi, Geller</u>		Date: <u>6/21/99</u>				
Number	Object	R.A.	Dec.	L/R	Exp	Comments
1-10	DARK				15m	
11-20	BIAS				0s	
21-30	FLAT				6s	
31-40	BIAS				0s	
41-50	FLAT				12s	
51-55	sky			#57	2s	
56	comp			↑		
57	N4486B	12 30	12 29	#57	6m	
58	comp			↑		
59,60	H244	13 23	36 07	#56	2m	
61	comp			↑		
62,63	H244	13 23	36 08	#56	2m	PA = 10°
64	comp			↑		
65	sn1999by	9 21	51 00	#2	15m	PA = 90°
66	comp			↑		
67	sn1999cp	14 06	-5 27	#2	20m	PA = 15° brightening
68	comp			↑		Tilt = 58.5
69,70	H244	13 23	36 08	#56	2m	PA = 94°, Tilt = 58.5
71	comp			↑		
72	ngc6177.348	12 05	19 42	#59	20m	Tilt = 610, PA = 90 Hα?
73	comp			↑		should've skipped it!!!
74	.353	12 05	20 31	#59	3.5m	
75	comp			↑		
76	.354	12 05	19 44	#59	8m	
77	comp			↑		
78	.362	12 06	20 01	#59	12m	
79	comp			↑		
80	.363	12 06	19 14	#59	9m	-redo?
81	comp			↑		
82	ngc2199.425889	16 33	39 37	#64	7m	

60 inch Telescope Log
 Observer: CALKINS
 PI: Geller
 Spectrograph: FJST
 Grating: 300L
 Date: 6/21/99
 Page: 7442

Number	Object	R. A.	Dec.	L/R	Exp	Comments
83	comp			↑		
84	.4262	16 25	38 48	#64	20m	
85	comp			↑		
86	.435508	16 28	39 25	#64	5m	
87	comp			↑		
88	.43985	16 34	37 41	#64	8m	VERY NICE!
89	comp			↑		
90	.446730	16 24	39 10	#64	7m	
91	comp			↑		
92	.446881	16 24	39 10	#64	8m	
93	comp			↑		
94	.447063	16 25	39 10	#64	10m	
95	comp			↑		
96	.447351	16 26	39 08	#64	10m	Cosmic on top of Hβ
97	comp			↑		
98	.450238	16 33	39 13	#64	17m	
99	comp			↑		
100	.450372	16 33	39 17	#64	15m	
101	comp			↑		
102	.450401	16 33	39 16	#64	20m	
103	comp			↑		
104	.451393	16 36	39 07	#64	15m	object west
105	comp			↑		
106	.459728	16 21	38 54	#64	6m	
107	comp			↑		
108	.460281	16 23	38 54	#64	8m	
109	comp			↑		
110	.461642	16 27	38 57	#64	17m	
111	comp			↑		
112	.462973	16 31	38 53	#64	20m	star, pins, appears diffuse

#96 strong cosmic ray right on top of Hβ line; could not separate - cut

60 inch Telescope Log				Spectrograph: <u>FAST</u>		
Observer: <u>CALKINS</u>				Grating: <u>3000</u>		Page: <u>7443</u>
PI: <u>Geller, Huchra, Kirshner</u>				Date: <u>6/21/99</u>		
Number	Object	R.A.	Dec.	L/R	Exp	Comments
113	comp			↑		
114	.473145	16 26	38 48	#64	12m	
115	comp			↑		
116	.474327	16 29	38 41	#64	10m	
117	comp			↑		
118	.49985	16 26	37 31	#64	14m	← last one!!
119	comp			↑		
120	2M182406	18 24	30 29	#68	8m	
121	comp			↑		
122	sn1999co	21 03	-14 35	#2	10m	PA=0°, star west
123	comp			↑		clouds moved in
124	2M221802	22 18	16 42	#68	3m	clouds...!!
125	comp			↑		looking for holes!!
126	2M205438	20 54	15 33	#68	4.5m	
127	comp			↑		
128	2M205556	20 55	16 43	#68	5m	star east
129	comp			↑		
130	2M190004	19 00	40 54	#68	4.5m	object east
131	comp			↑		
132	2M190010	19 00	38 27	#68	8m	clouds
133	comp			↑		
134, 135	BDP284211	21 51	28 51	#56	30s	thin clouds
136	comp			↑		
137-146	BEAC				0s	clouds @ sunrise
147-156	FLAT				6s	
157-166	BEAC				0s	
167-176	FLAT				12s	
177-186	DARK				15m	