



EUROPEAN SOUTHERN OBSERVATORY

Organisation Européenne pour des Recherches Astronomiques dans l'Hémisphère Austral
Europäische Organisation für astronomische Forschung in der südlichen Hemisphäre

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APPLICATION FOR OBSERVING TIME

LARGE PROGRAMME

PERIOD: **77A**

To be submitted only to: proposal@eso.org

Important Notice:

By submitting this proposal, the PI takes full responsibility for the content of the proposal, in particular with regard to the names of COIs and the agreement to act according to the ESO policy and regulations, should observing time be granted

1. Title	Category: A-3							
The VST ATLAS								
2. Abstract / Total Time Requested								
Total Amount of Time: 540h Total Number of Semesters: 4								
<p>We propose to make an ATLAS survey with VST. The initial aim is to survey 4500 deg² of the Southern Sky at high galactic latitudes to comparable depths to the SDSS in the North. The VST ATLAS will be the first step towards a panoramic digital survey of the Southern Sky in the optical bands. The ATLAS will complement the VISTA IR ATLAS proposed in the South. A prime science driver is to determine the dark energy equation of state by detecting 'baryon wiggles' in the power-spectrum of $\approx 450000 z \approx 0.6$ Luminous Red Galaxies (LRGs), selected from the VST ATLAS for spectroscopy via the new AAOmega instrument. Other uses include the colour selection of QSO candidates out to $z \approx 7$. Further potential dark energy probes exist including LRG z-space distortion, the Integrated Sachs-Wolfe Effect and the dependence of QSO lensing on redshift. Finally, the VST ATLAS+AAOmega will feed VLT with rare galaxy and QSO targets for high resolution spectroscopy, constituting a new and uniquely powerful tool for survey cosmology.</p>								
3. Run Period Instrument Time Month Moon Seeing Sky Trans. Obs.Mode								
A	77	OMEGACAM	40h	apr	d	$\leq 1.4''$	CLR	s
B	77	OMEGACAM	28h	apr	g	$\leq 1.4''$	CLR	s
C	77	OMEGACAM	40h	aug	d	$\leq 1.4''$	CLR	s
D	77	OMEGACAM	28h	aug	g	$\leq 1.4''$	CLR	s
E	78	OMEGACAM	40h	oct	d	$\leq 1.4''$	CLR	s
F	78	OMEGACAM	28h	oct	g	$\leq 1.4''$	CLR	s
G	78	OMEGACAM	40h	mar	d	$\leq 1.4''$	CLR	s
H	78	OMEGACAM	28h	mar	g	$\leq 1.4''$	CLR	s
I	79	OMEGACAM	40h	apr	d	$\leq 1.4''$	CLR	s
J	79	OMEGACAM	28h	apr	g	$\leq 1.4''$	CLR	s
K	79	OMEGACAM	40h	aug	d	$\leq 1.4''$	CLR	s
L	79	OMEGACAM	28h	aug	g	$\leq 1.4''$	CLR	s
<i>Following runs moved to box 3a, last page...</i>								
4. Principal Investigator: T. Shanks (Univ. of Durham, UK, tom.shanks@durham.ac.uk)								
Col(s): C.M. Baugh (Durham, UK), S.L. Bridle (UCL, UK), B.J. Boyle (ATNF, AUS), G. Busarello (OAC, I), M. Capaccioli (OAC, I), M.M. Colless (AAO, AUS), S.M. Croom (AAO, AUS), J.A Cruz da Angela (Durham, UK), M.J. Drinkwater (UQ, AUS), A.C. Edge (Durham, UK), J.P. Emerson (QM, UK), D. Evans (IoA, UK), C.S. Frenk (Durham, UK), N. Hambly (Edinburgh, UK), S. Hodgkin (IoA, UK), M.J. Irwin (IoA, UK), O. Lahav (UCL, UK), N. Loaring (MSSL, UK), S.J. Maddox (Nottingham, UK), R.G. McMahon (IoA, UK), N. Metcalfe (Durham, UK), S.L. Morris (Durham, UK), R.C. Nichol (Portsmouth, UK), J.A. Peacock (Edinburgh, UK), K. Pimbblet (UQ, AUS)								

5. Description of the proposed programme

A) Scientific Rationale: See attached proposal

B) Immediate Objective: See attached proposal

C) Telescope Justification: See attached proposal

D) Observing Mode Justification (visitor or service): See attached proposal).

6. Experience of the applicants with telescopes, instruments and data reduction

See attached proposal.

7. Resources available to the team, such as: computing facilities, research assistants, etc.

See attached proposal.

8. Special remarks:

See attached proposal.

9. Justification of requested observing time and lunar phase

Lunar Phase Justification: See attached proposal.

Time Justification: (including seeing overhead) See attached proposal.

Calibration Request: Standard Calibration
Convert to a normal programme? No

10. Report on the use of ESO facilities during the last 2 years

N/A

11. Applicant's publications related to the subject of this application during the last 2 years

- da Angela, J., Outram, P.J. & Shanks, T., 2005 MNRAS 361, 879: Constraining $\beta(z)$ and Ω_m from redshift-space distortions in $z \approx 3$ galaxy surveys
- da Angela, J. et al. 2005 MNRAS 360, 1040: The 2dF QSO Redshift Survey- XV. Correlation analysis of redshift-space distortions
- Croom, S. et al. 2005 MNRAS 356, 415: The 2dF QSO Redshift Survey - XIV. Structure and evolution from the two-point correlation function
- Outram, P.J., et al. 2004 MNRAS 348, 745: The 2dF QSO Redshift Survey - XIII. A measurement of Λ from the quasi-stellar object power spectrum, $P^S(k_{\parallel}, k_{\perp})$
- Croom, S. et al. 2004 MNRAS, 349, 1397: The 2dF QSO Redshift Survey - XII. The spectroscopic catalogue and luminosity function
- Shanks, T. 2004 In: "Maps of the Cosmos", IAU Symposium 216, ASP Conf. Ser., in press (astro-ph/0401409): Problems with the Current Cosmological Paradigm
- Outram, P.J., et al. 2003 MNRAS 342, 483: The 2dF QSO Redshift Survey - XI. The QSO power spectrum
- Myers, A.D., et al. 2003 MNRAS 342, 467: The 2dF QSO Redshift Survey - X. Lensing of background QSOs by galaxy groups

12. List of targets proposed in this programme

Run	Target/Field	α (J2000)	δ (J2000)	ToT	Mag.	Diam.	Additional info	Reference star
ABEF	SGP	01 15 00.0-32 30 00		135.0	22.1	1."4	RA 10h00:15h30,Dec -20:-2.5	
IJMN	SGP	01 15 00.0-32 30 00		135.0	22.1	1."4	RA 10h00:15h30,Dec -20:-2.5	
CDGH	N EQ	12 15 00.0-11 15 00		135.0	22.1	1."4	RA 21h30:4h00,Dec -50:-15	
KLOP	N EQ	12 15 00.0-11 15 00		135.0	22.1	1."4	RA 21h30:4h00,Dec -50:-15	

12b. ESO Archive - Are the data requested by this proposal in the ESO Archive (<http://archive.eso.org>)? If yes, explain why the need for new data.

No

13. Scheduling requirements

14. Instrument configuration

Period	Instrument	Run ID	Parameter	Value or list
77	OMEGACAM	A	IMG	u,g,r
77	OMEGACAM	B	IMG	i,z
77	OMEGACAM	C	IMG	u,g,r
77	OMEGACAM	D	IMG	i,z
78	OMEGACAM	E	IMG	u,g,r
78	OMEGACAM	F	IMG	i,z
78	OMEGACAM	G	IMG	u,g,r
78	OMEGACAM	H	IMG	i,z
79	OMEGACAM	I	IMG	u,g,r
79	OMEGACAM	J	IMG	i,z
79	OMEGACAM	K	IMG	u,g,r
79	OMEGACAM	L	IMG	i,z
80	OMEGACAM	M	IMG	u,g,r
80	OMEGACAM	N	IMG	i,z
80	OMEGACAM	O	IMG	u,g,r
80	OMEGACAM	P	IMG	i,z

3a.Run	Period	Instrument	Time	Month	Moon	Seeing	Sky Trans.	Obs.Mode
<i>...continuing from box 3, first page.</i>								
M	80	OMEGACAM	40h	oct	d	≤ 1.4"	CLR	s
N	80	OMEGACAM	28h	oct	g	≤ 1.4"	CLR	s
O	80	OMEGACAM	40h	mar	d	≤ 1.4"	CLR	s
P	80	OMEGACAM	28h	mar	g	≤ 1.4"	CLR	s