

REM: 

## CHILEAN APEX TELESCOPE TAC

Prop. #: 

## Proposal for observations

Category: Radio

Semester 2009-B

Submit pdf file to [apex@conicyt.cl](mailto:apex@conicyt.cl)

Deadline: 15 Abr 2009

## 1. Title

Proposal for Observing Time in APEX by a Member of the Chilean Astronomical Community.

## 2. Abstract

Provide a concise summary of your proposal. You can use this form to apply for time on any of the APEX instruments

Each proposal should contain a specific scientific project. If you have more than one project, then you should submit one separate proposal for each.

To see if you are entitled to apply for APEX-Chilean time, please check the following URL:  
<http://www.conicyt.cl/astronomia.html>.

!!!THE SUBMITTED PDF FILE MUST BE SUBMITTED IN LETTER FORMAT. FILES SUBMITTED IN A4 OR ANY OTHER FORMATS WILL NOT BE ACCEPTED!!!

## 3. Principal investigator

Status (A,S,V): ☒ A

◁ Name B. O'Higgins

e-mail [bohiggin@ichile.cl](mailto:bohiggin@ichile.cl)

Phone 2-100-10000

Institute Instituto Chileno de Historia de la Astronomía

Address 785-9083 Estación Central, Santiago, Chile

## 4. Co-investigators (names and institutions)

S. Allende (Cementerio General, Chile)

A. J. R. Pinochet (Cementerio General, Chile)

D. Portales (Catedral de Santiago, Chile)

M. Rodriguez (Til-Til, Chile)

J. M. Carrera (Catedral de Santiago, Chile)

◁ P. de Valdivia (Universidad de Valdivia, Chile)

I. Domeyko (Academia de Ciencias, Chile)

## 5a. Number of total hours requested on the APEX telescope

## 5b. Instrument(s) requested and hours in each

Facility Instruments

LABOCA:		230	345	1350
SABOCA:	SHFI:			

PI Instruments

CHAMP:	ARTEMIS:
ASZCA:	FLASH:

## 6a. Preferred months

first choice: Mar/Abr

second choice: May/Jun

## 6b. Other scheduling constraints

## 7. Past and future of this project

i) Time already awarded to this project:

ii) Time required to complete this project:

**8. Description of the programme (1 page of text + up to 2 pages for references, tables and figures.)**

*A) Scientific rationale* Describe the scientific context of the research that you intend to carry out using APEX observing time.

Make sure to provide a succinct, up-to-date review of the relevant literature, and to discuss the broader scientific implications of your proposed science.

*B) Scientific aim* Explain what exactly your team proposes to accomplish with the requested observations. Describe the reduction and analysis tools that you will use, and the scientific return expected.

## References

E., O'Higgins, B., Mackenna, V., de Valdivia, P., & Montt, M. 2050, A&A, 1112, 3836

Montt, M., O'Higgins, B., P., de Valdivia, P., & Mackenna, V. 2049, A&A, 1111, 1334

O'Higgins, B., Montt, M., P., de Valdivia, P., & Mackenna, V. 2048, in Stellar Populations in National  
Flags, ASP Conf. Ser. 9532, ed. J. San Martín, S. Bolivar, & P. de Orleans-Bragança (La Paz: Alianza  
Editorial), 65

**Figure 1:** Relatively noisy spectra of an extragalactic globular cluster.

**Figure 2:** The same spectrum as before, but now rotated by  $90^\circ$ .

Figure 3: An enlarged, further rotated version of the previous figure.

Table 1: Stars in National Flags			
Country	$N_{\text{stars}}$ (units)	Star type	$N_{\text{rays}}$ (units)
<i>American Continent</i>			
Argentina	+1	Sun of May	+32
Brazil	+27	Pentagon	+5
Chile	+1	Pentagon	+5
Uruguay	+1	Sun of May	+16
Venezuela	+8	Pentagon	+5
USA	+50	Pentagon	+5
<i>Other Continents</i>			
Australia	+6	6 Heptagons + 1 Pentagon	+7, +5
Bangladesh	+1	Circle	+0
Bosnia and Herzegovina	+7 $\frac{2}{2}$	Pentagon	+5
Cameroon	+1	Pentagon	+5
China	+5	Pentagon	+5
Iraq	+3	Pentagon	+5
Israel	+1	Star of David	+6
Marshall Islands	+1	Multi-rayed	+24
Namibia	+1	Circle + crown	+12
New Zealand	+4	Pentagon	+5
Nepal	+11 $\frac{1}{2}$	Rayed circle	+12
Niger	+1	Circle	+0
Pakistan	+1	Pentagon	+5

**9. Observational strategy and justification of requested time (please take into account overheads).**

To estimate your exposure times, you are encouraged to check the ETC tools that are available at the observatory web pages, such as:

- <http://www.noao.edu/gateway/ccdtime/> (CTIO, Visual)
- [http://www.ctio.noao.edu/instruments/ir\\_instruments/image\\_cal.html](http://www.ctio.noao.edu/instruments/ir_instruments/image_cal.html) (CTIO, NIR)
- <http://www.noao.edu/gateway/spectime/soarphx.html> (SOAR-Phoenix)
- [http://www.ctio.noao.edu/instruments/ir\\_instruments/irs\\_calc.html](http://www.ctio.noao.edu/instruments/ir_instruments/irs_calc.html) (SOAR-OSIRIS)
- <http://www.rem.inaf.it> (REM)

If an ETC is not available for your telescope/instrument combination, please consult directly with the team responsible for its operation.

**10. List of targets (note that the absence of a proper object list and information will weaken your proposal).**

Name	$\alpha$	$\delta$	Epoch	Mag.	Additional Information
HD 177482	21 08 46.85	-88 57 23.40	J2000	V=5.42	Closest star to the south celestial pole

**11a. APEX observing time in the last 2 years**

Proposal code	Proposal title			
CHILE-000A-0000	Testing Gravitational Repulsion in an Expanding Universe			
CHILE-000B-0000	Observational Evidence for a Spinning Solar System			
Dates	Telescope	Awarded time	Loss (%)	Reason(s)
13 Mar–10 Apr 1630	APEX2A	5 n	25	Cloudy skies
11 Sep 1850	FLASH	5 n	25	Instrumental failure
01–05 Oct 2006	LABOCA	5 n	10	High humidity
25 Dec 2100	APEX2A	8 h	0	

**11b. Brief description of the status of this (these) project(s), including publications based on these observations.**

Several papers have already been published on the basis of the acquired data. We have somehow been unable to prove that gravity is a repulsive force, but will keep trying. The Solar System does appear to rotate though, and magnetic fields are really important. Some of the papers published include the following:

O'Higgins, B., Carrera, J. M., & Portales, D., et al. 2049, A&A, 1111, 1334

Pinochet, A., & Allende, S. 2050, ApJ, 7000, 567

Pinochet, A., & Allende, S. 2050, ApJ, 7000, 567

Pinochet, A., & Allende, S. 2050, ApJ, 7000, 567

**11c. Other publications in the course of the past 3 years on the topic of this proposal (please include article titles).**

Rodriguez, M., O'Higgins, B., Domeyko, I., et al. 2006, A&A, 1111, 1334: *Study on the Independence Movements of Extraterrestrial Colonies*

Prat, A., O'Higgins, B., & Domeyko, I. 2005, ApJ, 6854, 2365: *Will the Stars in the Milky Way Arrive Somewhere as a Consequence of Their Rotation?*

**12a. If this proposal is part of a MSc or PhD thesis project, write here the name of the student, the thesis title, and briefly describe the importance of the requested observations to achieve the goals of the thesis.**

M. Bulnes (PhD, BIT), *The Matrix has you: Solar magnetic reconnection inside the matrix* The data to be acquired with this proposal will form the core of the student's thesis.

**12b. Describe how the observations complement data from other facilities. For each of the latter, indicate the nature of the observations (yours or those of others), and describe the importance of the observations proposed here in the context of the entire program.**