

<p style="text-align: center;">ESTADO FINAL RESOLUCION DEL CONSEJO</p> <p>Observaciones: _____</p> <p>_____</p>	<p>FECHA</p> <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>				<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> <ol style="list-style-type: none"> 1. APROBADO 2. PENDIENTE 3. RECHAZADO 4. A FISCALIA 		

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EVALUATION REPORT CENTERS FOR ADVANCED RESEARCH

I. PROJECT INFORMATION

CENTER'S NAME Center for Astrophysics

DIRECTOR Guido Garay

II. EVALUATION PANEL

NAME	ORGANIZATION/ INSTITUTION	E-MAIL	SIGNATURE
Dr. Alain Omont	IAP, Paris	omont@iap.fr	

III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)

PROGRAM'S NAME Area 1. Birth and evolution of structures in the universe.

PRINCIPAL INVESTIGATOR Leopoldo Infante

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	x			
Quantity of the results reached regarding the objectives and goals	x			
Quality of reached outcomes related to proposal objectives and goals	x			
Degree of integration with other ongoing programs of the Center		x		
Diffusion of the results	x			

PROGRAM'S NAME Area 2. Stellar Populations in the Local Universe

PRINCIPAL INVESTIGATOR Doug Geisler

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	x			
Quantity of reached outcomes related to proposal objectives and goals	x			
Quality of reached outcomes related to proposal objectives and goals	x			
Degree of integration with other ongoing programs of the Center		x		
Diffusion of the results	x			

* If there had been none, please disregard this question

PROGRAM'S NAME Area 3. The Extragalactic Distance Scale				
PRINCIPAL INVESTIGATOR Wolfgang Gieren				
ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	x			
Quantity of reached outcomes related to proposal objectives and goals	x			
Quality of reached outcomes related to proposal objectives and goals	x			
Degree of integration with other ongoing programs of the Center		x		
Diffusion of the results	x			

* If there had been none, please disregard this question

PROGRAM'S NAME Area 4. Star formation				
PRINCIPAL INVESTIGATOR Guido Garay				
ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	x			
Quantity of reached outcomes related to proposal objectives and goals	x			
Quality of reached outcomes related to proposal objectives and goals	x			
Degree of integration with other ongoing programs of the Center		x		
Diffusion of the results	x			

* If there had been none, please disregard this question

PROGRAM'S NAME Area 5. Low mass stars and planets.				
PRINCIPAL INVESTIGATOR Dante Minniti				
ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	x			
Quantity of reached outcomes related to proposal objectives and goals	x			
Quality of reached outcomes related to proposal objectives and goals	x			
Degree of integration with other ongoing programs of the Center	x			
Diffusion of the results	x			

- If there had been none, please disregard this question

PROGRAM'S NAME New area. Supernovae and Dark Energy				
PRINCIPAL INVESTIGATOR Mario Hamuy, Alejandro Clocchiatti, Dante Minniti				
ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *	x			
Accomplishment of objectives and goals of the reported program	x			
Quantity of reached outcomes related to proposal objectives and goals	x			
Quality of reached outcomes related to proposal objectives and goals	x			
Degree of integration with other ongoing programs of the Center	x			
Diffusion of the results				

* If there had been none, please disregard this question

IV. CENTER EVALUATION

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Uso Interno
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the Center	x			
Quantity of reached outcomes related to proposal objectives and goals	x			
Quality of reached outcomes related to proposal objectives and goals	x			
Degree of integration between the programs of the Center		x		
Creation and reinforcement of international networks	x			
Outreach	x			
Diffusion of results	x			
Establishment and tasks of the Advisory Committee		x		

RECOMMENDATIONS (see following concepts)

X					
APPROVE	APPROVAL WITH SUGGESTIONS	ADDITIONAL INFO.	PENDING	REJECT	FONDECYT USE

15	06	2008
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Evaluation Date

Signature reviewer

EVALUATION CONCEPTS ANNUAL REPORT

1. **Approve:** The reviewer recommends to accept the report in its present form since he/she considers objectives and goals fully accomplished and all relevant issues covered by the report.
2. **Approval with suggestions or minor observations**
 - 2.1 **Minor observations:** The reviewer recommends the approval of the report despite the justified incompleteness of some aspects that does not constitute an obstacle for the continuity of the Center activities.
 - 2.2 **Suggestions:** The reviewer recommends minor changes in order to improve the future performance of the Center.
3. **Additional information:** The reviewer requires additional documentation or specific explanations to fully evaluate the report.
4. **Pending:** The reviewer makes significant observations to the report and conditions its approval to the accomplishment of specific demands.
5. **Reject:** The reviewer has strong objections to the contents of the report.

EVALUATION COMMENTS:

The Center for Astrophysics had been extremely successful in its first five years in expanding the number of researchers, increasing the international visibility and reputation of Chilean astronomy, educating and training the next generations of astronomers, strengthening public outreach and creating career opportunities for Chilean astronomers. This success has continued in the 6th year, 2007, in all these areas. The number of publications, the strength of international collaborations and the new increase in the number of students remain especially impressive.

The five established areas of research have confirmed the production of important results, such as the discovery of $z > 7$ galaxies, the recognition of several stellar populations in Omega Centauri, now believed to be the remnant of a former dwarf galaxy, the launching of the ATLASGAL submm survey of the Galactic disk, and obtaining physical parameters for extra solar planets. The new area on local supernovae is already very promising.

One may fully subscribe to the list of objectives that have been achieved and the strengths of the Center, which are listed in Sections 2 and 7 of the Annual Report. However, more developments could have been appreciated about the list of weaknesses of Section 7, making suggestions for improving the situation, especially about a better integration of activities among the institutions and the publications of PhD students.

One must highly appreciate the efforts which have led to the success of the proposal for the development of high technology in Chile, through initiatives in millimetre and sub-millimetre astronomical instrumentation as well as on high performance astronomical computing. The hiring of new researchers with the proper background to lead these enterprises will be an important new step for the Center.

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EVALUATION REPORT CENTERS FOR ADVANCED RESEARCH

I. PROJECT INFORMATION

CENTER'S NAME: Center for Astrophysics

DIRECTOR: Guido Garay

II. EVALUATION PANEL

NAME	ORGANIZATION/ INSTITUTION	E-MAIL	SIGNATURE
Dr. Ronald Snell	University of Massachusetts	snell@astro.umass.edu	

III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)

PROGRAM'S NAME: Birth and evolution of structures in the universe

PRINCIPAL INVESTIGATOR: Leopoldo Infante

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of the results reached regarding the objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

Comments:

The key project, MUSYC, associated with this research area (a Deep Wide Optical-Infrared Galaxy Survey) has been extremely successful and a major achievement in this area. The MUSYC project has contributed to our understanding of the evolution of galaxies at redshifts of 2-3 and has produced numerous published results. The project has also resulted in many exciting follow-up studies. The recent results on very high redshift candidates is also very interesting. This research area has provided good worldwide visibility to Chilean astronomers in the area of cosmological studies.

PROGRAM'S NAME: Stellar Populations in the Local Universe				
PRINCIPAL INVESTIGATOR: Doug Geisler				
ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

Comments:

This research area has participation by Center members at all three institutions. An important topic has been the study of the dynamics of early type galaxies using globular clusters. Deriving the distribution and mass of dark matter in galaxies halos is an important test of the CDM paradigm for the formation of galaxies, and this group has been very successful. An equally interesting topic for this group is galaxy evolution which they are addressing by studying the stellar populations and elemental abundances in Local Group Galaxies. The study of multiple populations in globular clusters is an exciting new direction and relates well to the understanding galaxy formation and evolution.

PROGRAM'S NAME: The Extragalactic Distance Scale				
PRINCIPAL INVESTIGATOR: Wolfgang Gieren				
ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

Comments:

An important part of this program has been the Araucaria key project which has been productive and successful in providing improved local calibration of the extragalactic distance scale out to distances of a few megaparsecs. Expanding these techniques into the infrared is an important step and will reduce the systematic errors involved with corrections for extinction and reddening.

PROGRAM'S NAME: Star Formation				
PRINCIPAL INVESTIGATOR: Guido Garay				
ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *		X		
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center		X		
Diffusion of the results	X			

Comments:

This group has been very productive in studying the process of low and high mass star formation. They have made good use of the new facilities APEX and ASTE to probe the distribution and kinematics of the dense gas surrounding embedded massive protostars. The group is also participating in ATLASGAL, an ESO large Program, that will provide an unbiased view of massive dust clumps in the southern Milky Way; we look forward to results from this key project. ALMA follow-ups of sources found in this survey may be worth pursuing. In previous reviews it was suggested that this group should consider obtaining some training with existing mm/submm interferometers to prepare for observations with ALMA. It was not mentioned in the annual report whether this recommendation was acted on. ALMA will revolutionize the study of star formation, both in the Milky Way and nearby galaxies, and it is not too early to begin planning for key projects with this facility.

PROGRAM'S NAME: Low Mass Stars and Planets				
PRINCIPAL INVESTIGATOR: Dante Minniti				
ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals		X		
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center		X		
Diffusion of the results		X		

Comments:

The group is participating in the ESO large Programme 666, designed to follow up on OGLE transiting planet candidates. The program has been successful in confirming OGLE extrasolar planets and in deriving the mass-radius relation of exoplanets, brown dwarfs and M dwarfs. Such a study is important to test planetary, brown dwarf and low-mass star models. The group already has a number of publications from this work. Another major initiative was the VISTA Variables in the Via Lactea, but progress on this initiative was not reported. Center members from all three institutions are participating in studies in this area.

IV. CENTER EVALUATION

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Usos Internos
Degree of adoption of suggestions from the last report *		X		
Accomplishment of objectives and goals of the Center	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration between the programs of the Center		X		
Creation and reinforcement of international networks	X			
Outreach	X			
Diffusion of results	X			
Establishment and tasks of the Advisory Committee		X		

RECOMMENDATIONS (see following concepts)

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APPROVE	APPROVAL WITH SUGGESTIONS	ADDITIONAL INFO.	PENDING	REJECT	FONDECYT USE

6	6	08
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Evaluation Date

Ronald L. Snell

Signature reviewer

EVALUATION CONCEPTS ANNUAL REPORT

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4. **Pending:** The reviewer makes significant observations to the report and conditions its approval to the accomplishment of specific demands.

5. **Reject:** The reviewer has strong objections to the contents of the report.

EVALUATION COMMENTS:

The Center for Astrophysics has completed another successful and very productive year. The Center is playing a significant role in transforming Chilean astronomy into a coordinated and collaborative endeavor in research and education. The most visible evidence of the research productivity of the Center is the 112 refereed publications in the leading astronomical journals in the world, and many of the papers involve members from several of the participating institutions. The key projects are an important component of the Center, and the four ongoing key projects have helped build cooperation between institutions within the country and collaborations with groups abroad. These key projects are also an effective means to take advantage of the observational resources available to Chilean astronomers. The five continuing research areas have all been very productive and effective in bringing increased international visibility to Chilean astronomy.

The Center has recently added a new research area entitled Supernovae and Dark Energy. This is an exciting new area that addresses one of the most important unsolved problems in astrophysics. This research area is synergistic with many of the other research areas and well suited to the expertise within the Center and particularly with some of the new researchers. The focus on establishing a low redshift sample of supernovae is a good choice for this group.

The Center has also continued to play a vital role in developing human resources within Chile. Several new researchers have been added to the Center since 2006, and these new researchers expand on the already strong research talent at the Center. The most striking gains has been in graduate education. With Center support, graduate programs now exist at all three institutions and the number of graduate students have increased enormously. The report also mentioned that more than 30 graduate and undergraduate students were working on science projects associated with key projects. The Center also supports mini-courses for training graduate students in specific topics. It would have been very valuable if more details on these mini-courses had been provided in the annual report.

The Center has a strong outreach component. The websites for children and the general public are nicely arranged and informative. The Center continues to support telescopes for public outreach at each of the institutions and a remote telescope at Cerro Calan for use by high school students to interest them in astronomy. The Center is also implementing several radio telescopes to promote amateur radio astronomy. More details of these outreach activities would have been valuable for reviewers of this year's annual report. Center members have also produced two very successful monographs for high school students and the educated general public.

In short, the Center for Astrophysics continues to be force in transforming Chilean astronomy. The Center has been extremely successful in expanding the number of researchers, increasing international visibility for Chilean astronomy, educating and training a new generation of Chilean astronomers and strengthening public outreach within the country.

The annual report addressed two of the suggestions made in previous evaluations. These suggestions concerned the development of technology within Chile and the importance of an Advisory Committee for the Center. In response to the first suggestions, the current annual report mentioned that CONICYT has approved a plan for developing technology through initiatives in millimeter and submillimeter

astronomical instrumentation and high performance astronomical computing. The details of this plan are not presented, but I believe this is an important direction for the Center to pursue. I look forward to a progress report on this initiative next year along with more details on the plan.

The other suggestion concerned the need for an Advisory Committee. I am pleased to see that the Advisory Committee is being reconstituted and will meet in middle 2008. Such a committee can be beneficial in providing a critical review of the Center's activities as well as input on future directions. I hope the committee has international representation and that regular annual committee meetings will be scheduled.

In addition to the two suggestions addressed in the annual report, previous evaluations of the Center made a number of other suggestions. One suggestion concerned the preparation needed for ALMA. I already commented in the star formation research area on this need. Although the star formation group is currently most connected with millimeter and submillimeter wavelength astronomy, ALMA will touch on nearly all of the current research activities of the Center and thus should be a high priority for most researchers. I reiterate that the Center should begin now training personnel in millimeter/submillimeter interferometry by teaming with international groups that have operational interferometers. The Center should also begin planning now for ALMA key projects. Little was mentioned of these activities in the annual report, however I hope these activities are well underway.

Previous evaluations also mentioned concerns about the Center website, which is still incomplete. I could not find information on activities of the Center such as seminars, schools, workshops or research meetings. Such a website is important to maintain so that all Center members, including the students, are aware of Center activities. In addition it was strongly suggested that website be in both Spanish and English to help advertise Center activities to the international astronomical community, this has not happened.

Finally the annual report included the Center's internal analysis, including both strengths and weaknesses. I agree very much with the Center's self-assessment. One of the weaknesses mentioned was the lack of student participation in journal publications – this was also noted in past evaluations. With 30 students participating in Center key projects, I am surprised that more students are not included as authors. The students should be strongly encouraged to participate in papers earlier in their graduate training. It is important for students to have publications if they are going to be competitive for post graduate positions in the world job market. What has the Center done to address this weakness ?

Several of the other weaknesses mentioned in the Center's internal analysis related to coordination issues in course offerings, postdoc hiring and outreach activities. The original Center proposal planned on establishing a Research Committee and a Graduate Studies Committee, do these exist ? If not, they should be established, as they may help provide the coordination of these activities. With widely separated institutions, communication and coordinations are important issues. Are regular meetings of the Center continuing ? There was no mention in the report of meetings nor any evidence on the Center website of upcoming meetings.