



# GEPI - Galaxies, étoiles, physique et instrumentation

## Rapport Hcéres

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agence d'évaluation de la recherche  
et de l'enseignement supérieur

Section des Unités de recherche

## Evaluation report

Research unit :

Galaxies, Etoiles, Physique et Instrumentation  
(GEPI) – UMR 8111

de l'Observatoire de Paris



April 2009



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Le Président  
de l'AERES

Jean-François Dhainaut

Section des unités  
de recherche

Le Directeur

Pierre Glorieux

april 2009



# Evaluation report )

## The research unit :

Name of the research unit : Galaxies, Etoiles, Physique et Instrumentation (GEPI)

Requested label : UMR

N° in case of renewal : 8111

Head of the research unit : Mr Francois HAMMER

## University or school :

Observatoire de Paris

## Other institutions and research organization:

CNRS

Université Paris 7

## Date(s) of the visit :

April 6<sup>th</sup> and 7<sup>th</sup> of 2009

# Members of the visiting committee



## Chairman of the committee :

Mr Roger MALINA, Observatoire Astronomique de Marseille- Provence

## Other committee members :

Mr Anthony BROWN, Leiden, Netherlands

Mr Cyril BLANPAIN, CEREGE, Aix-en-Provence

Mrs Corinne CHARBONNEL, Université de Genève, Suisse

Mrs Eva GREBEL, Heidelberg University, Germany

Mr Joseph SILK, Oxford University, UK

Mrs Christine WILSON, McMaster University, Canada

## CNU, CoNRS, CSS INSERM, (représentant INRA, INRIA, IRD...) representatives :

Mr Denis MOURARD, CoNRS

Mr Eric SLEZAK, CNAP

Mr Jean-Paul KNEIB, CNU

# Observers

## AERES scientific representative :

Mrs Rosine LALLEMENT

## University or school representative :

Mr Daniel EGRET, Président de l'Observatoire de Paris- Meudon

Mr Thomas PATZAK, représentant de Paris-DIDEROT, Paris VII (partly)

## Research organization representative (s) :

Mr Alain CASTETS, CNRS-INSU

Mr Jean-marie HAMEURY, Directeur adjoint CNRS/INSU (partly)



# Evaluation report

## 1 • Short presentation of the research unit

The **Galaxies, Etoiles, Physique et Instrumentation (GEPI) Laboratory** is one of the 7 Research Units of the Observatoire de Paris. It was founded in 2002, bringing together researchers, technical and administrative staff from other research units.

GEPI is organised around three research teams: two scientific and one instrumental.

The **Equipe de Physique Stellaire et Galactique** focuses on a) the formation, evolution and internal structure of stars and b) the study of structure and evolution of our galaxy and nearby galaxies. It currently includes 16 researchers, 12 associate researchers, 6 engineers, 4 post-doctoral researchers and 3 PhD students. It hosts the Cosmological Impact of the First Stars (CIFIST) group financed by a Marie Curie Excellence Grant.

The **Equipe Physique des Galaxies et Cosmologie** focuses on understanding the formation and evolution of galaxies. It currently includes 11 researchers, 2 associate Researchers, 6 engineers, 5 post doctoral researchers and 8 students. One of its researchers currently holds an ANR Chaire d'Excellence.

The **Equipe Pole Instrumental** carries out three activities in support of development of state of the art instrumentation in astrophysics: a) a Design team that addresses the range of design and definition to test and integration. b) an R and D team that develops components using micro-lithography and opto-electronic components. c) a Fabrication team that is oriented mainly towards micro and opto mechanical components. It currently includes 26 engineers and technicians and one student. It is involved in instrumentation and studies for VLT (Very Large Telescope) and ELT (Extremely Large Telescope). Note: the group carries out instrument and R and D work not only for GEPI, but for other Observatory Laboratories.

GEPI carries out its teaching program through the Observatory of Paris and its affiliation with the University of Paris 7 Diderot and the Ecole Doctorale "Astronomie et Astrophysique Ile de France". There are currently 21 CNAP personnel, 2CNU, 5 CNRS, 1 University Professor and one Maitre de Conference is being recruited. 9 PhD students were awarded their diplomas over the past 4 years.

- Permanent research staff :
  - University (enseignants-chercheurs) : 2 (of which 1 PR and 1 MCF)
  - Organismes : 5 CNRS
  - CNAP 21
  - Professeurs, Astronomes et Directeur de Recherche : 14 (of which 1PR, 12 Astronomes, 1 DR)
  - Maîtres de Conférences, Astronomes adjoints et Chargés de Recherche : 12 (1MCF, 9 Ast. Adj., 2 CR)
  - Titulaires de l'HDR : 15 including 6 as PhD directors
  - Titulaires de la PEDR : 4
- Non permanent research staff :
  - PhD students on 1/12/08 : 11
  - Post-docs + ATER : 13
- Permanent technical and administrative staff : 49
  - ITA CNRS : 29
  - IATOS : 20
- Non Permanent technical and administrative staff : 3
- Number of PhDs defended in 4 years : 9 (on 1/12/2008 since le 1/10/2004)



- Number of permanent researchers publishing : 25 out of 28 plus in addition publishing researchers : 3 contractual researchers, 3 IR Engineers, 7 Emeritus Researchers and 1 associate researcher
- Number of papers in refereed (Rang A) journals 2004-2008 : 386
- Number of invited reviews 2004 - 2008 : 36
- Number of books 2004 - 2008 : 2

## 2 • Preparation and execution of the visit

All the required documentation was received by the Committee well ahead of the site visit and the logistical preparations were excellent.

The Committee met in the GEPI Paris location on April 6 and the Meudon site on April 7. Visits of technical facilities were conducted at both sites.

On April 6 there were presentations by GEPI Director, the coordinator of the Stellar and Galactic Physics Team, the coordinator of the Galactic Physics and Cosmology Team and by coordinator of the Pole Instrumental. All of the sessions were public and the meetings were well attended by GEPI researchers and staff. The committee also met with members of the Pole Instrumental.

On April 7 there were closed meetings (without Directors), with the Laboratory Council, the administrative and engineering staff (ITA), the postdoctoral researchers, the PhD students, researchers in the Stellar/Galactic Physics and Galactic Physics/Cosmology groups (without their team leaders). Separate meetings were held with the Team leaders. A closed meeting was held with the representatives of Paris 7 Diderot University, The Observatory of Paris Director, the representatives of INSU, and the Délégué Régional of the CNRS.

The Committee deliberated in closed session at the end of each morning and afternoon session. A Committee member only dinner was held on the Sunday night before the meeting. The draft report and evaluation grids were circulated and discussed on line and a committee consensus was obtained on the conclusions in this report.

## 3 • Overall appreciation of the activity of the research unit, of its links with local, national and international partners

By any metric, the creation of GEPI in 2002 has been a success. Scientific productivity has been excellent, there are new emerging areas of scientific research and the international visibility of GEPI is good. GEPI has good collaborations both within France, and has established a number of European and international collaborations including its involvement in the French-Chinese International Laboratory. In addition to the Chaire d'Excellence, GEPI participates as a co-I to 3 ANR projects. It has established an international recognition in a number of areas ranging from stellar to galactic physics to observational cosmology, and in the building of state of the art instrumentation for astrophysics. The founding director of GEPI together with the scientific, technical and administrative staff are to be congratulated for their work bringing together and strengthening pre-existing research activities as well as initiating new ones that are well positioned for the years to come.

The Laboratory is involved in major new projects of the discipline, the ESA astrometric mission GAIA and the VLT and ELT instrumentation; these have been identified as priority areas for the GEPI and the Committee strongly endorses both these priorities and the potential for GEPI to play major roles in these programs in the future. The Committee recommends that the CNRS, CNAP, Observatoire de Paris and University of Paris-Diderot to build on the undeniable strengths of the GEPI and develop its leadership potential through appropriate new hires of scientific, technical and administrative staff.



The Pole Instrumental of GEPI is a first rate instrument development group, well focused in terms of the scale and technology of projects that it can take on. It has good working and contractual relations with agencies such as ESO, CNES, ESA. Contracts have been established with companies (Imagine-Optic, CILAS, Mauna-Kea technologies). A number of young engineers and technicians have been recruited in recent years. It has succeeded in carrying out work both in house for GEPI projects but also for other Laboratories at the Observatory of Paris. The committee endorses the plans of the Pole Instrumental, both in the areas of new hires and also refurbishment of facilities. There is a need to hire in the areas of quality assurance and systems engineering. The committee notes that in the past there has been good coupling between major hardware involvement and science return : the concern expressed about the need for “instrument scientists” is a real one that can be addressed in a number of ways but must be addressed. With respect to the strong orientation in the coming years of GEPI instrumental developments towards ELT instruments, a closer collaboration between the concept team of the PI and the scientific teams will be needed so that an “integrated team” can be defined to serve the development of a large project.

The major difficulty facing the GEPI, as recognized by the Laboratory and its Tutelles, is how to compensate for the upcoming retirement of a large number of scientists, in the face of current restrictions on hiring of scientists in France and the growing hiring competition. Of the 30 permanent scientists as of October 2008, 11 are over 60 and only 4 are under 40.

Next year the Laboratory will be seeking a new Director: it is important that the Director chosen propose a realistic plan for the development of GEPI, and be able to develop the priority areas. A stronger strategy with respect to the University will be required so that an excellent cohort of Ph D students can be attracted; the full range of options for hiring postdoctoral researchers must be exploited; inter-laboratory collaborations will have to be used when it is not possible to hire into the Laboratory. Given the paucity of new permanent positions, it is essential to be pro-active in seeking approval for additional maitre de conference positions. These difficulties face all laboratories in France, but GEPI clearly faces particular difficulties because of the demographics of its scientific staff. It will take thorough strategic planning by all the GEPI leadership and key project staff to find ways of carrying out the priority science programs given realistic levels of new permanent scientist hires.

## 4 • Specific appreciation team by team and/or project by project

### Equipe Physique Stellaire et Galactique

The team has demonstrated strengths and international recognition in key areas concerning hot stars and their environments and “first stars”. The hot stars group has recently brought innovative and important observational constraints on hot star physics and the Be star phenomenon. Important new results using the COROT satellite have also been obtained in astero-sismology relating internal oscillations to outbursts; work using COROT is also leading to involvement in the KEPLER (NASA) mission, as well as in the proposal for PLATO (ESA). A young researcher recently received the Prix SF2A Jeune Chercheur 2007. They also have obtained new results on Be star magnetism through the Zeeman signature using the Narval and Espadons polarimeters (The MiMes Program). The demonstrated expertise will be invaluable in exploiting the results expected from the GEPI guaranteed time on the VLT spectrograph “X Shooter”, as well as future astero-seismology missions. The work also provides the basis for the scientific preparation for GAIA in the context of the GAIA Hot Stars Team. The work by the group developing the CESAM code (for stellar evolution) is important not only for GAIA through the FLAME (Final Luminosity, Age and Mass Estimation) program, but also for the scientific return from astero-seismology projects.

As stated above, the main concern, clearly articulated both by the team and the Laboratory management, is that the pending retirement of a number of key scientists fragilises this perspective. Although the projected needed scientific new hires is understandable, it seems unlikely to be achieved projecting from the rate of hiring over the past 8 years and taking into account the context of possible hires in France in the coming years. Multiple strategies must be explored including closer collaboration with other groups whether at the Observatoire de Paris and within the larger project teams, cross linking with the GEPI Galaxies and Cosmologies group on GAIA, the possibility of University hires, pursuit of postdoctoral researcher funding.





The committee has some concern on the small number, in proportion, of researchers supervising PhD students and postdoctoral researchers.

The “First Stars” work owes its international recognition to the pioneering work of senior GEPI researchers, and its exploitation of data in the VLT era. Since 2005 the team hosts the CIFIST (Cosmological Impact of the First Stars) group financed by a Marie Curie Excellence Grant. Important advances have been made in the development of 3D hydrodynamic stellar atmosphere codes, analysis of chemical composition of metal poor and globular cluster stars, new determination of solar abundances. These results as a whole provide extremely important contributions not only on first stars but on the chemical and dynamical evolution of the Galaxy. The research projects are innovative and at the interface between stellar physics, the physics of galaxy formation and cosmology. This expertise will be an asset in the exploitation of X Shooter, as well as GAIA in the future. The CIFIST group is dissolving at the end of the funded period. All avenues must be pursued, both within GEPI and through collaborations, as well as continuing the strong involvement of students and postdoctoral researchers, to retain the expertise developed by CIFIST.

**GAIA** : The committee was impressed by the excellent positioning of GEPI on the GAIA project, both in terms of technical work on “key” software development, particularly for spectroscopy, as well as the initiation and coordination of the French “Action Spécifique” on GAIA. GEPI scientists actively participate to the ‘Data Processing and Analysis Consortium’ (DPAC) and have important responsibilities on Data simulation, Spectroscopic Processing, On board Data Processing, and on work packages on double and multiple stars, hot star emissions and characterization, among the most important. GEPI scientists are active in the GAIA national and European structures. The committee notes the concern expressed on being able to ensure a commensurate involvement in the science return from GAIA. The recent hires, the clear GEPI priority in this area, the possibility of scientific strategies involving several science groups as well as collaboration with scientists in other Observatory Laboratories provide the framework to build a strong science return for GEPI on the GAIA project. GEPI must continue to articulate scientific leadership as it has initiated with the Action Spécifique. All hiring routes should be explored, emphasizing multiple strategies and reinforced collaboration with scientists in other Laboratories.

Note de l'équipe	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A	A+	A	A	A

#### Equipe Physique des Galaxies et Cosmologie

The team has a number of well focused research areas connected to understanding how galaxies form and evolve. There is a particular expertise developed in understanding the internal kinematics of galaxies, both in the nearby universe and at larger distances. A large number of highly cited papers have been published in the last four years.

Following the large success of the GIRAFFE spectrograph installed in 2002 at the VLT, GEPI has been strongly involved in the development of the X-Shooter instrument for ESO/ VLT (Very Large Telescope) and first observations will begin this year. Thanks to the GEPI involvement in VLT instrumentation, there have been a number of important discoveries particularly on the properties of distant galaxies, exploring how angular momentum is distributed as a result of galaxy mergers; the development of metallicity gradients, the relations between energy injection and velocity dispersion at red-shift 2.

The group is involved in preparations and scientific work for the development of SKA (Square Kilometer Array) , through involvement in the SKA design studies and the NIBLES survey. Projects with the Nançay radio observatory and Arecibo are developing a large HI census of Sloan Survey galaxies, work that is geared towards SKA precursor surveys. There is involvement in SKA design studies and the EMBRACE project.



Members of the team have leadership roles on studies for ELT (Extremely large Telescope) instrumentation and are well positioned in the possible development of ELT instrumentation, ELT EAGLE (project scientist role) and EVE (principal investigator role). Should one of these projects be carried forward to Phase B by ESO, it will be a boost to the Team and to the GEPI as a whole. Other hardware projects such as involvement in 3D NTT represent a good coupling of scientific expertise and capabilities of the Pole Instrumental. The awarding of an ANR Chaire d'Excellence to a visiting professor has allowed the group to hire postdoctoral researchers and supervise a number of PhD students. Important results on the properties of distant galaxies have been obtained, using the SINFONI instrument, allowing a number of well cited results to be obtained on Galaxy and galaxy merging physics.

The committee agrees with the stated strategy of scientific hiring to reinforce and facilitate the major possible ESO selections. We note the scientific cross linking between ELT and GAIA on the hot stars area for instance, so that a transversal strategy may be possible. The team includes several first rank scientists and has a strong program of involving students and postdoctoral researchers which should continue to be emphasized. The group is active in teaching at all levels. The recent hire of a University Professor has strengthened the relationship to the University and the ability to attract students. The committee agrees with the hiring of new permanent staff to build on the strengths of the group and the prospects for large involvement in future projects.

**SKA** : The committee noted the ongoing work in radio astronomy both in the context of the Nancay Observatory and in the terms for EMBRACE, LOFAR and SKA. Given that this area is not one of the two top priorities of the GEPI Laboratory, and given that other Observatoire de Paris Laboratories are heavily involved in these projects there is a need for a clear Observatoire de Paris SKA strategy to ensure that the activities in GEPI are well integrated within a larger context. The strategy for students and postdoctoral researchers needs to be developed. A credible plan towards SKA involvement was not presented to us and must be developed, including possibly in the framework of another laboratory.

Note de l'équipe	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A	A+	A	A	A

### Pole Instrumental

As stated above the committee gives a strong rating to the capabilities of the Pole Instrumental and its close coupling to science projects both of GEPI and other Observatory Laboratories. Should GEPI be contracted for major ELT work, this will put particular focus and increased needs in the areas of project management, systems engineering and quality control. For large projects of this type it will be necessary to structure stronger "project teams" that integrate management, engineering and scientific functions. If the Pole Instrumental takes on a large involvement in an ELT project, this will affect the ability of the Pole Instrumental to support projects outside of GEPI.

Note de l'équipe	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A+	A+	A+	A+	A+



## Virtual Observatory, Information Technology, Computer Science

The committee reviewed the available documentation and presentations concerning computer science and information technology, including modeling and simulation, databases and pipelines. It was unable in the time available to evaluate the adequacy of plans and resources to upcoming needs, particularly with the important role of GEPI on GAIA. The recent establishment of a small IT group is a good development and should be supported. A more comprehensive plan and approach seems warranted to look at the scientific and technical competencies, the evolving mid range needs in this area, including how the Pole Instrumental needs in this area are addressed.

## 5 • Appreciation of resources and of the life of the research unit

### – Teaching :

GEPI researchers and astronomers are engaged in a number of teaching activities both within the context of the Observatory, university diplomas ECU and SU, teacher training, and the Masters programs “Dynamics of gravitational systems”. They participate in the Ecole Doctorale “Astronomie et Astrophysique Ile De France”, and are affiliated with the University of Paris-Diderot. A Full Professor was recently hired, and a new Maitre de Conference will be hired shortly. Given recent changes in the status of French Universities, the University will play an increasingly important role in coming years. GEPI is encouraged to find ways of strengthening its ties to the University both from the point of view of attracting first rate students but also to develop the possibility of other faculty hiring possibilities in the coming years. The Committee Report Four years ago encouraged GEPI to increase its numbers of students and postdoctoral researchers, and the trend has been positive. It was also recommended that the GEPI appoint a “Charge de Mission pour l'Enseignement” which does not seem to have been implemented. While recognizing that teaching loads may be difficult for scientists with Principal Investigator roles on hardware projects, such positions are an important part of the hiring strategy.

The representative from the University stated their support to GEPI, as expressed by the Professor and upcoming Maitre de Conference hiring, and the committee encourages GEPI to explore in the future ways of evolving the teaching program and activities particularly as some of the more senior scientists take their retirement. The Laboratory Director in his presentation indicated the importance of continuing to increase the activities in teaching, thesis direction and formation of postdoctoral researchers; it is important that the new Director be committed to the needed development of this area.

### – Communications and Consultation :

As stated above, GEPI was created only in 2002 as a newly organized Laboratory. It is in general well organized. The motivation and enthusiasm of those the committee was able to meet and hear were impressive. The overall Laboratory priorities and strategies seem to be well understood, if not universally supported (as is the case in all Laboratories). The coming years hold a number of challenges including the appointment of a new Director, the retirement of senior researchers, growing responsibilities of younger researchers, the possible awarding of major ESO contracts, getting ready for the scientific phase of GAIA, the changing institutional framework of French research institutions. In this context, it is important that the various management and consultation groups, such as the Laboratory Council, work well for developing the strategies of the Laboratory and airing issues and concerns. The committee felt that the Laboratory Council was not sufficiently engaged in discussions with management and that there was perhaps a need for a separate Scientific Council which can focus on the scientific and teaching strategies and choices.

### – Services d'Observations :

A clear picture of how GEPI has organized its work on ‘Services d'Observations’ was not available for the committee. Given the large number of CNAP scientists, and several retirements, GEPI needs to articulate better how it is organized to accomplish the Services d'Observations and which services are specifically affected by retirements, particularly since INSU is currently re-evaluating its strategy on Service d'Observations as part of a current strategic planning exercise. New national priorities are being established that will provide the framework for possible new CNAP hires at GEPI.



– Ph D Students and Post Doctoral Researchers :

The committee has been impressed with the group of Ph D students and post doctoral researchers who seem to be getting the full benefit of their work at GEPI. They are taking an active role in promoting scientific interactions, participate in international conferences. Notwithstanding their understandable concern about permanent hiring prospects, there are a number of strong candidates for such hires. The young researchers should continue to be encouraged, and if possible ways for them to interact with their cohorts in other Observatory laboratories encouraged. GEPI needs to continue its ongoing program to increase the number of students and postdoctoral researchers.

– Public Outreach :

GEPI is active in science outreach and education both through the Observatory of Paris and through its own programs, e.g. to the benefit of deaf people or hospital patients. No particular new needs were clearly expressed.

– Administrative Services :

The administrative team seems to be good but they expressed a number of worries and needs, as well as concerns about the administrative interface with the Observatory of Paris. There are a number of concerns about promotion possibilities and training. They are reactive and appreciated by the GEPI members.

## 6 • Recommendations and advice

The strengths of GEPI include the fact that in a relatively short time since its founding it has established a strong identity and visibility, attracted a number of first rate new scientists, positioned itself in leadership roles on programs of French and European priority. It has created a strong instrument development group that works both for GEPI and other Observatory of Paris Laboratories. While having a good understanding of its own strengths and weaknesses, it is one of the French Laboratories that can be counted on for hardware roles in future ESO instrumentation projects of an appropriate scale.

The committee proposes a very positive evaluation for GEPI as a whole, with particular note of the excellent scientific productivity with a number of important and highly cited scientific results. Both the Stellar and Galactic Physics Group and the Physics of Galaxies and Cosmology Group are strong.

In general, GEPI is well managed, but with the appointment of a new Director a number of issues will need to be addressed. The key issue facing the Laboratory in the coming years is the need to hire a number of junior and more senior permanent scientists. Given realistic expectations of the number of new hires in the next few years, GEPI will have to adjust its strategy to maintain its leadership position in priority projects and continue to develop its areas of scientific excellence. This uncertainty inevitably translates into a concern about the ability of the Laboratory to carry all the research areas presented to the committee as their plan for the future. Some areas will inevitably become “sub-critical” and present a weakness in the proposed plan. The choice of a new Director is an important one in this respect and it is important that the Laboratory as whole be involved in the decision process with the ‘Tutelles’.

Within the report above a number of suggestions and possible recommendations have been identified ; the limited time available to the committee could have limited their understanding of the issues and their ability to assess current plans to address them. With this caveat a number of recommendations should be made :



– **Recommendations to the GEPI :**

- Scientific Council, Laboratory Council :

GEPI should find a way to establish a more engaged forum for discussion of GEPI scientific, project and Laboratory strategy. This could be done by establishing an enlarged group of scientists within the Laboratory Council or setting up a separate Scientific Council as is done in many Laboratories. There is a need to create a broader debate and consensus on Laboratory wide scientific issues, encourage the involvement of the younger researchers, and discussing the plans of the smaller research areas and projects in the context of Laboratory wide priorities.

- Involvement in Institutional Committees at the National Level :

Participation of GEPI staff in University, Observatory, CNRS and CNAP national committees is strongly encouraged. Such involvement will improve the general understanding of how to achieve GEPI long terms goals as well as identifying new opportunities.

- GEPI involvement in Virtual Observatory and GEPI IT Capabilities :

The committee could not make a comprehensive understanding of GEPI capabilities and plans in the area of Virtual Observatory, or of its general capabilities and planning in the Information Technology Areas. These areas will be important for instance for the GEPI involvement in GAIA. The newly established IT support group is a positive development. The committee suggests that GEPI benefit from a good internal review and establish of a mid and longer term plan.

- Relationship with the Université Denis Diderot (Paris 7) :

GEPI should continue to find ways of strengthening its relationship with the university both in terms of possible future hires, and how to attract an increasing number of students. Given the changing institutional context in French research it is desirable to continue to expand the initiatives that have begun with the recent hire of a Professor.

– **Recommendations to the authorities :**

- Engineering and Technical Staff :

A good evaluation has been given to the Pole Instrumental of GEPI. There are a small number of French Laboratories with technical capabilities for significant involvement in major hardware projects such as VLT and ELT. GEPI is one of them. It is suggested that INSU work with the Observatory of Paris to address some of the engineering hiring needs identified by GEPI and the Observatory Council for the strengthening of a number of areas of the Pole Instrumental.

- Scientific Excellence :

The attention of INSU is brought to the concern of GEPI on the upcoming retirement of a number of researchers and the need to hire a few key scientists to maintain GEPI's leadership in key areas. While recognizing that it is not possible to target specific Laboratories for hiring, it is in the interest of the astronomical community for INSU work with GEPI and Observatoire de Paris to develop suitable strategies particularly focused on projects where there has been a very large technical involvement, such as GAIA and VLT/ELT, or areas of particular scientific excellence and promise.

- Enabling Inter- Laboratory Contacts :

Given the relatively small group of postdoctoral researchers and doctoral students in the GEPI, ways must be found to stimulate contact between doctoral students and postdoctoral researchers at the different Observatory Laboratories. The recent student organized conference is a positive development and should be encouraged. The committee recognizes that in any institutional setting, inter-laboratory contact is often difficult but this should be part of the overall strategy of encouraging the younger researchers in GEPI.



- Evaluation of the “Pole Instrumental” :

Given that the Pole Instrumental carries out work both for GEPI and other Laboratories, the committee suggests that as part of the next review there would be some formal way of obtaining inputs from these other Laboratories, under the form of a document prepared by these laboratories or a presentation by one mandated member.

- Pole Instrumental Mid Range Plan :

The committee was impressed with the way that the Pole Instrumental has been able to carry out both in house GEPI projects as well as projects for other Observatory Laboratories. As part of the recruitment of a new GEPI Director and implementing the new 4-year plan, they recommend that the Observatory work with GEPI and the other Laboratories that entrust work to the Pole Instrumental to develop a mid-range plan to help the PI develop a longer range vision for its R and D activities, work load, hiring and training plans.

In particular, if GEPI wins a new major hardware project on VLT and ELT this will have a large impact on PI ability to carry on other support work for other Laboratories.

- Observatory Strategy on Faculty Hiring :

The Committee recommends that the Observatory conduct discussions with a view of strengthening the ties of GEPI with the University, identifying possible hire areas in the future and seeking ways to increase the number of PhD students at GEPI. The University should explore ways of strengthening its connections with GEPI, building on the areas of strength through possible future Maitre de Conference hiring and helping GEPI to attract first rate students.

– Recommendation to CNAP :

There are number of retirements in coming years of CNAP scientists. As part of the planned review by INSU of the Services d’Observations nationally, particular attention should be paid to the ability of GEPI to refocus through redeployment on the Services d’Observations that are now national priorities.

Note de l’unité	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l’environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A	A+	A	A	A

Answer from the laboratory

We have had the pleasure to welcome the Visiting Committee on April 6<sup>th</sup> and 7<sup>th</sup>, 2009. On the laboratory side we confirm that the visit has been done in an agreeable atmosphere and with relevant and important questions asked by the committee's members.

The report of the Visiting Committee reflects the above and has been received by the members of GEPI as very relevant and well aware of the main activities and questions in the laboratory. Moreover we have a general agreement on the recommendations made by the Committee to the lab, including the interesting suggestion to envision separated Scientific Council for the laboratory.

The members of GEPI are proud that all the important fields of scientific and technical activities have been strongly supported by the Committee's report. Given such an excellent report, they believe to be part of the excellent laboratories and hope an evolution of their grade quotation (formerly A). A lack of an improvement in the grade of the laboratory would appear to be at odds with the overall appreciation of the Committee, e.g. "By any metric, the creation of GEPI in 2002 has been a success. ...". Although we agree with the Committee that our main weakness is linked with the age distribution of permanent researchers, which is too biased towards age near retirements, we believe that a non-improvement of the GEPI grade would not help the laboratory on this important issue. The laboratory is involved in major and long duration projects that are priorities for the European astronomy (ESO and ESA), and this requires permanent positions in research to preserve and improve the French involvement. A non-optimal grading of the laboratory might dilute the positive message of Visiting Committee to the national recruiting committees and to the governing Institutes.

Along the same lines, we notice that a few remarks of the report may have been misplaced, owing to the complexity of the French system of research, with which the non-French members of the committee were not sufficiently acquainted. This includes for example the fact that the PhD students of the "Ecole Doctorale A&A d'Ile-de-France" are registered at Paris 7 University as well as at Paris Observatory, an Institute having the status of a University. Moreover Paris Observatory is the leading Institute of the Doctoral School. We are lucky to have one GEPI member who is co-responsible of the Ecole Doctorale, and she indeed plays the role of the "Chargée de mission pour l'Enseignement". Same comment may apply to the "Service d'Observations" that are particularly developed in GEPI, and well documented as we made yearly detailed reports to both INSU and Paris Observatory (including names, activities, SO number and fraction of involvement).

Besides these remarks, we thank the Visiting Committee members for their excellent report and hope this will help to solve the important question on how we can warrant our involvement and know-how on the major projects in astrophysics.

Comments and suggestions to the AERES:

1- The grade is fixed and homogenised during a meeting of Presidents of Visiting Committees of different laboratories, in particular to warrant a reasonable distribution of grades. We believe that such system leads to some conservatism, simply because it is quite difficult to downgrade a laboratory, which unavoidably leads to a strong difficulty in upgrading a laboratory that has shown a strong positive evolution. As for the Committee's report we believe the GEPI is in the latter case, and as such we suggest that AERES proposes another system of grading, possibly by evaluating also the evolution of the laboratory.

2- The Visiting Committee of the GEPI included several members from foreign countries which is well accepted by the laboratory members, as research, especially in astrophysics, is made within an international frame. However a significant part of the message from the GEPI was to explain the quite complex system of the French research, especially the even more complex system of the French Universities with the additional complexity brought by the numerous reforms. We suggest that the AERES informs the Visiting Committee members on the French research context by a seminar in advance of the visit.

3- Although it may be relevant to exclude the Director from the meeting with the different staff members, it is surprising to exclude the Director further from the meeting with the representatives of the governing Institutes. It gives the misleading feeling that the Director has to be excluded from any important meeting that concerns the laboratory. This has prompted the present Director to ask the Institute representatives to stay at the last meeting, between the Committee and the Director. We suggest to the AERES to organise a meeting with both Institute representatives and laboratory directors.

Francois Hammer, Director

