Minutes of the Action Fédératrice Etoiles day held on November 24, 2016

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32 people participated to the 4th day of the Action Fédératrice Etoiles (AFE).

Coralie Neiner presented the goals, organisation, and budget of the AFE:

The AFE started officially on January 1st, 2014, for 5 years. It is coordinated by an office composed by Coralie Neiner (LESIA, AFE coordinator), Franck Delahaye (LERMA), David Katz (GEPI), and Claire Michaut (LUTH).

The AFE relies on 2 types of actions:

- Scientific actions, which are inter-laboratories collaborations on scientific projects, which can be performed over several years, and which benefit from financial support of a few thousands euros per year. The AFE typically supports ~6 scientific actions per year. The goal of these actions is to foster or reinforce collaborations on transverse topics between multiple laboratories at the Observatory, and to increase the visibility of the theme « Stars » at the Observatory.
- Structuring actions, the goals of which are to strengthen the stellar community within the Observatory, to help this community to get organised and renew itself, and to make it more visible outside of the Observatory.

Representatives of most of the current scientific actions presented their work, results and plan. Many other scientific results regarding the theme « Stars » were also presented by members of the Observatory. Presentations are available on the AFE website.

A call for renewal of current scientific actions or start of new scientific actions will be published at the end of December 2016 with a submission deadline at the end of January 2017.

The money attributed to scientific actions is available to fund missions of Observatory members participating to an action to visit another institute for collaboration or present their results in a conference, invitations for short-term stays of external visitors at the Observatory to participate to the action, or small meetings of the collaboration.

Discussion were held during and in particular at the end of the day, and the following points emerged:
- It is recalled that, to facilitate the participations of foreign PhD students, postdocs, and visitors to the AFE, it had been decided that the presentations at the AFE day would be in English, unless there are only French speaking people in the room. For the same reasons, the AFE documents, calls, emails, or these minutes for example, are written in English.
- Participants were satisfied with having many presentations about scientific results not necessarily associated to an AFE action during the AFE day. In particular, talks about new instruments (e.g. GRAVITY) or missions (e.g. GAIA) were appreciated.
- The AFE should encourage PhD students to come and present their PhD work, so that the rest of the AFE members learn about these new projects and people.
- Several of the current scientific actions come to an end now. Therefore, proposals for new scientific

actions to be started in 2017 are strongly encouraged by the AFE office.
- Timing for the AFE call is excellent because it comes several months after PNPS, etc, so that teams know exactly what they will receive or not from other funding sources and what they need to ask to AFE. Moreover, the answers to the call are fast and the money is available early in the year, even though the call deadline is in January. The AFE should keep this timing.
- Chantal Stehle finds that the way AFE money can be spent, once allocated, is too complicated. Coralie Neiner recalled the procedure: the PI of the AFE action simply sends an email to the AFE secretary (Patricia Nibert) to request the plane/train tickets or other expense, with copy to Coralie Neiner. Coralie (or another member of AFE) authorizes Patricia to spend the money after checking that the expense indeed corresponds to the funded scientific action. If the person who wants to spend the money is not the PI of the AFE action, that person must also copy the email to the PI, so that he/she can react if he/she disapproves the expense. Thus, spending AFE money only requires one single email to Patricia, Coralie, and the PI of the action.
- Christophe Sauty and Véronique Cayatte from LUTH mentioned that they often have trips funded by several sources of money, including AFE. This has been problematic, since the Observatory cannot have two administrative files for the same trip. Since AFE money is Observatory money, it is easier to combine AFE money with CNRS money (PNPS, ANR, CNES,...). Merging two sources of Observatory money is almost impossible, unless one transfers part of the money from one laboratory to the other. Such issues did not arise with laboratories other than LUTH, where the administrator seems stricter than elsewhere. LUTH members of the AFE suggest that a general message from the Observatory scientific council to the laboratories explaining that transfers from a laboratory to AFE is possible in these cases might help.
- A direct consequence from the above issue is that, when the requested amount of money for a scientific action cannot be fully allocated, the AFE office should rather allocate an amount that corresponds to the full costs of a smaller number of trips.
- AFE members are encouraged to propose short texts about their important results to the webmaster of the AFE day (Franck Delahaye), so that they can be published on the AFE website.

Scientific actions:

The 7 scientific actions funded in 2016 are:

- “Magnetic massive binaries” via interferometric (LESIA-HRAA) and spectropolarimetric (LESIA-Etoile) studies, combined with theoretical calculations of tidal effects (LUTH, IMCCE, LESIA-Etoile). The coordinator of this action is Mary Oksala. This action started in 2014 for 3 years. It will thus stop now. It has produced interesting scientific results, especially in the frame of the BinaMIcS project.
- “Abundances, radiative accelerations, and chemical stratification in stars” via spectroscopic studies (GEPI and LESIA-Etoile), thanks to atomic data (LERMA) and diffusion models (LUTH). The coordinator is Frédéric Royer, who succeeded to Georges Alecian. This action started in 2014 and continued in 2015 and 2016. It will probably continue in 2017 as well. It produces fruitful results both on the observational and theoretical sides.
- “Tidal dissipation in stars hosting planets”, thanks to realistic hydrodynamical models (LESIA+IMCCE+LUTH) which can be used in celestial mechanics codes (SYRTE) and allow the simulation of the dynamical evolution of star-planet systems (SYRTE+IMCCE). The coordinator is Christophe Le Poncin-Lafitte. This action started in 2014 and continued in 2015

and 2016. With the departure of several members of this team from the Observatory, including a PhD student who defended his thesis in September 2016, it is probable that this action will not be renewed in 2017, although the collaboration will continue and still produces results.

- "Simulations of shocks in pulsating stars", by coupling HADES hydrodynamical radiative models with static structures of envelopes of Cepheids and other pulsating stars (LUTH) and comparing them to observational constraints (LESIA). The coordinator of this action is Claire Michaut. This action started in 2014 and continued in 2015 and 2016. Progress has been slower than anticipated, but this can be explained by the need for heavy programming.
- "Simulations of stellar jets and accretion funnels", thanks to the study of the formation zone close to the star and the impact of accretion in the magnetosphere, in order to understand the extraction of angular momentum from the disk and star, via MHD simulations and semi-analytical models (LUTH and LERMA). The coordinator of this action is Veronique Cayatte. This action started in 2015 and continued in 2016. It produces interesting results and should thus continue in 2017 as well.
- "Experimental campaign for radiative shocks with PALS". This action concerns the year 2016 only. The goal was to study radiative shocks in low pressure gas cells in a regime dominated by radiative flux, with the PALS laser. The material for this experiment was funded by the Observatory scientific council directly, while AFE funded the associated trips and the visit of a collaborator in Meudon.
- "Meeting for the preparation to the scientific exploitation of GRAVITY in 2017 in stellar physics", organised for the Observatory members to help them prepare ESO proposals requesting observations with GRAVITY. This 1-day meeting was finally replaced by a longer workshop open to the whole community, co-funded by CIAS and AFE.

If you wish to join one of these actions, do not hesitate to contact its coordinator.

Structuring actions:

- A mailing list axe.etoiles@obspm.fr has been created in 2014 to allow AFE members to exchange informations within the Observatory stellar community, including AFE calls. There are currently 78 people registered to this mailing list. Members of the Observatory can register via the sympa.obspm.fr server. This list also allows everyone to share, e.g., announcements for seminars at the Observatory related to the « Stars » theme.
- An AFE day is organised every year in the second half on November, to inform Observatory members about AFE, discuss new ideas of scientific actions, present results of ongoing actions, foster new collaborations,...
- The AFE office encourages members of AFE to submit topics for trainees, PhD students, or postdocs on projects related to the theme « Stars » in collaboration between several laboratories, whether they correspond to actions funded by AFE or not. These topics can be proposed in particular to the doctorate school (PhDs), and to the Observatory scientific council or PSL (postdocs). A PhD (Océane Saincir, co-directed by Laurent di Menza and Claire Michaut) indeed started in 2015 on the scientific action led by C. Michaut. Moreover, Mary Oksala, who was an Observatory postdoc at the Observatory from mid-2014 to mid-2016, took over the coordination of one of the scientific action, previously led by Pierre Kervella. In the same way, the AFE office encourages the submission of proposals for long-term visitors, for example on

temporary available Observatory positions (PTV), on CNRS positions, or from universities from which our laboratories depend.

- There is an AFE website available at http://afe.obspm.fr and accessible under the main Observatory website (« Research » section). The webmaster is Franck Delahaye. The goal of this website is to increase the visibility of AFE within and outside of the Observatory, to publish striking results, to provide information relative to AFE (calls, etc),... The website also hosts a directory of all AFE members with their pictures, to allow each of us to find the right person at the Observatory to start a collaboration.