

Arecibo Proposal Disposition and Telescope Scheduling Procedures*

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1 Background

Compared to other telescopes, two practices at Arecibo in recent years have been unusual:

- A-rated proposals never expired: they remained active until the requested telescope time (approved once) was fully scheduled, no matter how long that took.
- Many long-term proposals had little review following initial approval.

As a result of these practices, there was a huge backlog of time to schedule. Because of this, we cannot be sure that the best science that could be done with (or was being proposed for) Arecibo was in fact being scheduled. There was no way for a reviewer reading a proposal submitted in 2012 to compare its merits against one submitted and last formally reviewed in 2004. Users may have great new ideas that will require a lot of telescope time, but it may be very hard to schedule such projects expeditiously while so many other A-rated projects remained active.

*To the extent that existing documentation concerning proposals and scheduling (e.g., on Arecibo's web pages) is inconsistent with these guidelines, this document takes precedence. In time we will ensure consistency.

2 Revised procedures

2.1 Common peer review (no “skeptical reviews”)

We aim to identify the most promising projects among all being proposed, and to then schedule and do all that we can to make those successful. We feel that the best way to do this is through transparent peer review. As such, we are doing away with the skeptical review procedure that in principle applied until now to many large radio astronomy proposals.

2.1.1 No prior preference for survey projects

In addition, there will be no prior preference given to survey/consortium versus other types of proposals, and within the set of survey/consortium proposals there will be no assumed prior “equal status”. Time allocation will be fundamentally determined by peer review and telescope schedule pressure, which varies greatly as a function of LST and day/night.

2.2 New meaning of proposal grades

We are changing the meaning of grades for proposals. However much time is required to complete an entire project, *at each proposal deadline users will be making a specific time request for that semester, or in some cases for 1 year.* An A grade will mean that whatever time is approved by the ASAC (Arecibo Scheduling Advisory Committee) *for that semester (or in some cases for 1 year)* will be scheduled that term, and if that proves impossible, it will be scheduled during the following term. If it is not scheduled by then, it will expire. A B grade will mean that up to a certain amount of time is tentatively approved *for that semester.* We expect that many B proposals will be scheduled at least in part during the semester for which they are tentatively approved. But if they’re not, they will expire altogether (i.e., no B-rated time will be carried over to another semester, even if some of it was scheduled in the current semester). It’s also possible that a proposal will have some time approved with a grade of A, and some with a grade of B.

If you’re familiar with the meaning of A/B grades for NRAO proposals, you’ll recognize that this scheme is comparable. To be more explicit, here is the new meaning of the grades for Arecibo proposals:

- “A” projects will have the highest scheduling priority. They will be considered for scheduling for up to one term beyond that for which time is approved. In other words, if for some reason (e.g., equipment failure) we cannot schedule the approved A time for the requested semester, we will aim to schedule it during the next relevant semester (which may be up to one year later, e.g., if a particular LST is required at night).
- “B” projects will have the next highest scheduling priority. They will be considered for scheduling for only one semester. We expect that several of these projects can receive a significant portion of their granted observing time. We recommend that the project team consider visiting Arecibo to increase the chances of having their B project scheduled¹.
- “C” projects are in effect “filler” projects, with the lowest priority, and they will be considered for scheduling for only one semester.
- “D” projects will not be scheduled.

2.3 Submitting proposals on September 3, 2012

Many projects requiring telescope time as of January 2013 will have to (re)submit proposals in September (see explanation in § 7.1), which will be evaluated uniformly by the same set of reviewers in each area, as currently — e.g., all pulsar (P) proposals will be reviewed by all of the “pulsar reviewers”; all “radio astronomy” (A) proposals will be reviewed by all of the (non-pulsar) “radio astronomy reviewers”, and so on. Using the grades/ranking and comments from those reviewers, the ASAC will make final determinations, as currently. (We are also in the process of increasing the pool and diversity of our external reviewers.)

2.4 Proposing one year at a time

Some projects are naturally “one-year projects”. For instance, some astronomy projects require night time observing. For this reason, in an hypothetical example requiring a total of 50 hours, it may be that the observers can only use 10 hours

¹We believe that in general it is good for projects, for the team members involved (in particular students), and for the observatory to have researchers do a significant portion of the project work on-site. We thus intend to encourage such a presence. The implementation details remain to be worked out, but we ask that interested members of B-rated projects contact us at camilo@naic.edu after the results of a proposal round are released.

in the Spring semester, and 40 hours in the Fall, for a project that is one coherent whole. In that case we would encourage the users to submit a proposal for 50 hours at the September deadline, specifying very clearly that only 10 hours can be done in the Spring term and that the remaining 40 hours are requested for the Fall.

Another example: newly discovered pulsars require a full-year span to obtain timing solutions. It makes no sense to allocate time for 6 months and entertain the notion that time for the second semester will not be allocated — in such a case, the first 6 months of time would have been wasted. In such an instance, it would make sense to request time for the full year.

For other time-critical projects (including some driven by seasonal climatology) it also makes sense to request observations straddling semesters.

In all those instances, we encourage the users to carefully describe, justify, and request time over a 1-year interval – and to be very explicit about how much time is being requested for each of the two semesters.

Proposals can also be submitted and accepted more than 1 year in advance of scheduling, where additional planning is required (e.g., for spacecraft encounters, or for projects involving complex multi-telescope campaigns).

2.5 Long-term projects/surveys

By way of example, a large, multi-year project must justify its overall case in the initial proposal, as now. But if the project is expected to require 1000 hours of telescope time over 10 semesters (say, with an uneven distribution across the Spring and Fall terms), at a given deadline the proposers are strictly requesting (and, if approved, the ASAC is awarding) time *for at most the coming year* (e.g., 30 hours for the next Spring semester and 70 hours for the next Fall semester). At future relevant deadlines, the full proposal is to be resubmitted, with a description of progress seamlessly integrated into the text², new telescope time requested (in this example, perhaps another 100 hours, perhaps more or less), and the reviewers and ASAC, based in part on the progress of that project, and being able to compare this request with all the other proposals being submitted at that deadline, will make their recommendations and determinations.

²The first time that a large/long-term proposal is submitted, the scientific case will naturally occupy a large fraction of the text, and there will be no progress report; in subsequent submittals, a description of the progress may take up considerable space, and the scientific case may have to be abridged — it should still be self-contained and substantial enough, however, for reviewers, including possibly new reviewers, to be able to judge the merits of the entire project.

3 Dynamic telescope scheduling

Some of our users have expressed a desire to see “dynamic telescope scheduling” implemented at Arecibo. This means different things to different people, and it means something different for the Green Bank Telescope and a telescope like Arecibo, where work is done in three different disciplines, and where both Earth and space weather may be a factor. We are considering what we can do to improve matters in this area, but in the meantime we remind our users that if they have “unusual” scheduling constraints, they should talk to us about the detailed requirements. This very much starts with the submitted proposal: be as detailed as you can be in your description and justification of ideal scheduling constraints (e.g., if you “want to use the telescope within seven days of a new moon *and* when the weather is clear”, say so, but also give us a sense of what “clear weather” means, and how we all might determine that). We really want to help!

4 Proposal evaluation criteria

4.1 Intellectual merit

In reviewing the proposals we aim to consider, as always, the intellectual merit of the project. Users are strongly urged to consider that some of the reviewers/ASAC members are *not* experts in the area of the work being proposed. A good proposal will clearly explain what is being proposed, how it is to be carried out, but also why it addresses a scientifically important question, in a manner that is comprehensible to a non-expert in the sub-field.

4.2 “Broader impacts”

Beyond intellectual merit, we wish to pay closer attention to “broader impacts” of the work being proposed (language that some of you will be familiar with from the National Science Foundation). One clear, but by no means sole, example is the educational and public outreach components. For instance, currently we are often aware of graduate student participation in a project. But we may not know the details, and there’s potentially a big difference between having a few graduate students “involved” in a project, and having some students for whom the project is a central component of their PhD theses. It will be to the advantage of proposers whose projects contain very significant student participation (at any

level) or outreach to provide details. Broader impact is not a requirement for proposal approval, but if there is any it may make a significant difference, and it will be advantageous to describe it clearly.

4.3 Productivity

It sometimes comes to pass that a project is awarded significant amounts of telescope time, but years later no publication has resulted from it. We'll want to know the outcome of the most recent projects led by the PI(s) of a *newly* proposed project. This can consist of a list of publications, and/or a brief (few sentences) explanation of the status of the project(s). This should be included as the last section of the proposal before the References. For now we are not making this more explicit (e.g., how many projects should be addressed?), but it is a requirement for past PIs. Our intent is to reward productivity.

5 Page limits

For regular proposals, the new size limit will be 4 pages, within which should be included References and figures as well as, if relevant, the new requirements mentioned in § 4.3 (and possibly § 4.2).

For large proposals, defined to be those that request more than 300 hours for the *entire* project, the new size limit will be 7 pages.

If a project forms the central component of students' theses (masters or PhD), we encourage the inclusion of an additional page per such student that in effect contains a summary of the thesis proposal.

In order to aid readability of proposals, they should be written in a font size no smaller than 11 pt, and with margins of no less than 1.0 inch on all sides.

6 Commensal project considerations

With commensal projects, there is in general value in being able to do much more science for marginal greater expenditure of observatory resources. We aim to continue to support current and future commensal projects, subject to the level of time allocation that they earn through the proposal disposition process, and subject also to the groups of researchers involved wishing this to continue.

Consider for example one current primary project that has two associated commensal projects. In order to continue their experiments into 2013, all three of these groups will have to submit separate proposals at the September deadline. If any of the groups were to feel strongly that they should be a primary project (and are not so currently) and/or that they don't wish to continue in commensal mode (e.g., because they've determined that the compromises they've had to make result in a big hit to the science that they wish to do), they should propose to do as they wish, explaining and justifying their requested observing strategy/time, etc.

If however these groups mutually feel that the commensal strategy is working well, they should coordinate at the proposal stage in the following way: each of the proposals should contain the *actual* observing scheme and associated observing time. All the overheads that might be associated with a commensal observing scheme need to be considered at the proposal submission stage, and it is these realistic estimates of time required to complete a project that will be considered by the reviewers/ASAC. Basically, we aim to have a realistic understanding of the implications of commensality at the proposal submission stage.

7 Spring 2013: transition period

We expect that as we roll out these revised procedures, the Spring 2013 semester will be one of transition. We don't wish to needlessly burden our users (or observatory staff or external reviewers) by requiring proposals at the September 3 deadline if the corresponding currently active projects would finish anyway sometime in the Spring semester.

7.1 Who needs to (re)propose what in September 2012?

We have determined which currently active projects are not likely to be completed by the Spring 2013 semester (January 1–June 30). We will shortly contact the PIs of those projects, and they will be required to submit a proposal at the September 3 deadline requesting/justifying a specific amount of time *for the Spring 2013 semester* (and possibly also for the Fall 2013 semester, as appropriate).

For at least some of the ALFA survey projects, the proposals as (re)written for the September 2012 deadline will naturally differ substantially from those written, in some cases, several years ago. In particular, the knowledge gained from the ALFA work to date will have to be incorporated into the new proposal. These proposals will have to indicate clearly what has been accomplished to date (with

how much telescope time), including what publications/theses have resulted, how much time is required to complete the overall project, what is expected to be accomplished when the project is finished, and they will also have to address important issues that have been identified in previous work (e.g., how will RFI be handled, if that has proven to be a concern).

All large projects, not limited to ALFA, should have a web page (with URL indicated in the proposal) that at a minimum presents in clear fashion (for non participants) the aim and current status of the project (including such things as fraction completed, and results including publications), as well as status of data release if appropriate. In general, Arecibo data have a proprietary period of 18 months.

8 Cover sheets

We will somewhat modify the current proposal cover sheets in order to make them more useful to all concerned. We expect to have these available in early August, and will contact the user community then. We also hope to make available some web-based tools that users should find useful (e.g., to answer such questions as “at what LST is this source visible?”, and “on what days of the year is a particular LST available at night?”)

9 Feedback

These revised procedures have been adopted after consultation with representatives from the Arecibo Observatory Users Committee and feedback from many in the user community and our external proposal reviewers. We hope that the result will be a more level playing field, where the most promising proposals are identified via peer review, with continuing oversight as needed, and with scientific and educational productivity rewarded. We also expect that these revised procedures will lead to simplified and more responsive telescope scheduling, and more flexibility to schedule for all disciplines.

However, we are sure that the procedures can still be improved. In light of experience, and your feedback (which we encourage you to provide, along with requests for clarification, to Fernando at camilo@naic.edu), we will revisit these procedures as needed.