

## A.2.9 Astrophysics Suborbital Research Program

### 1. Scope of Program

This Astrophysics Suborbital Research program element solicits proposals for basic supporting research and technology in the area of astrophysics greater than 100 Å, and for the study of gravitational physics and general relativistic phenomena, as carried out by experiments flown as part of NASA's Suborbital Program. The range of wavelengths spans the extreme ultraviolet, ultraviolet, and visible spectral regimes, the three decades from the near infrared to the millimeter regime in those areas of direct interest to NASA's space program, and extends several decades into the radio spectrum. This program solicits science investigations, the completion of which involves the flight of instruments as payloads either (i) on suborbital sounding rockets or from stratospheric balloons; or (ii) on moderate duration, reusable platforms, such as the Spartan free-flying platform that is carried to and retrieved from low Earth orbit by the Space Shuttle. The latter type of program will be evaluated on a contingency basis, with no expectation of flight. This NRA is for new development efforts, as well as for ongoing programs. In all cases, such a proposed investigation must include appropriate plans and resources for the reduction and analysis of the data that are expected to be taken. **Note that this solicitation replaces the Ultraviolet, Visible, and Gravitational Astrophysics Suborbital Program and elements of the Infrared/Submillimeter/Radio/Interferometry Astronomy Research and Analysis Program.**

### 2. Programmatic Information

This program typically plans launches several years in advance, with several flights per year for astrophysics sounding rockets and balloons. Proposals submitted in response to this NRA, therefore, may submit budgets for up to three years. These budgets are expected to cover complete suborbital investigations, including payload development and construction, instrument calibration, launch phase, and data analysis. The proposals selected will be funded on a yearly basis. Yearly funding allotments to complete a period of performance after the first year require an Annual Progress Report, which should include a summary sufficient to demonstrate that satisfactory progress has been made, and an updated budget.

From time to time, astrophysics disciplines receive opportunities to fly small space instruments as secondary attached payloads on expendable launch vehicles, or payloads on reusable platforms, such as the Spartan platform, or the ejectable Hitchhiker. Flight opportunities of this type are infrequent and do not arise on a regular or predictable basis. They usually have a significant cost uncertainty. Therefore, these types of nontraditional suborbital flight opportunities are being solicited under this NRA on a contingency basis only, with no expectation of funding or flight. Submittal through this NRA allows these types of payloads to be peer reviewed and to provide a ready list of scientifically and technically excellent payloads that could be flown if the opportunity and funding arise. If proposing this type of payload, the proposer should identify the type of platform that would be suitable for the proposed experiment.

One goal of this Program Element is to maintain the continuity of both instrumental expertise and laboratory facilities of research groups specializing in the fields of experimental astrophysics. Hence, the number of groups that can be supported to fly sounding rockets (and other forms of flight opportunity) is limited and heavily dependent on the funds available to this program. NASA does not carry reserves to accommodate any cost overrun incurred by a particular investigation. Such a situation may entail either descopeing the initially proposed investigation, or delaying or canceling a particular launch date opportunity.

The total funding available for this program is expected to be approximately \$4.5M beginning in FY 2000. At present, the program supports eight sounding rocket investigations, three balloons, one Hitchhiker payload (launched on the Space Shuttle in October 1998), and two investigations on the ORFEUS-SPAS II mission (launched on the Space Shuttle in November 1996.)

Current plans call for issuance of this call for Astrophysics Suborbital Research investigations at least once every three years. However, proposers may specify shorter periods of performance if the full three-year period is not required to complete their intended program. Proposers are encouraged, but not required, to define a program which may be accomplished within a three-year period. It is recognized that the proposed investigation may evolve with time. Therefore, emphasis should be placed on describing the first year's effort and include as much detail as possible regarding planned second and third year activities, including the planned flight phase and data analysis. Similarly, a detailed budget supporting the first-year's work is required, together with a reliable estimate for succeeding years. For proposals requesting support beyond three years, key projected activities occurring after the initial three-year interval should be identified. Such programs will be subject to full competitive review at the end of the three-year period.

During the next decade, NASA and the European Space Agency (ESA) expect to launch satellites to explore, in detail, the cosmic microwave background (CMBR). Consequently, individuals proposing CMBR investigations should endeavor to complete their program within one or two review cycles (three to six years).

If at all possible, student participation in this Astrophysics Suborbital program is strongly encouraged, especially if it can be concluded within the nominal tenure of graduate training. Therefore, brief details of the educational goals and training of such personnel should be included in the proposal. Note that such student participation is not to be confused with the Education and Outreach Program described in Section A.5.1. Additionally, a brief description of the plans for the reduction and analysis of data should also be included in the proposal.

NOTE: Appendix C contains critical information necessary for the preparation and submission of proposals submitted in response to this NRA. In particular, Section C.5.3 contains detailed standards concerning the format, page limits, and contents of a proposal. The submission of a proposal not in compliance with these standards may complicate and/or hinder its efficient and complete evaluation. Therefore, deficiencies in format

and/or omission of key information may result in a proposal being found unacceptable for evaluation, or if evaluated, being adversely affected during the evaluation process.

The schedules for submission of the Notice of Intent and proposal are given in Table 1 of the cover letter of this NRA. The World Wide Web site for submitting both the NOI and the *Cover Page/Proposal Summary* (see Appendix C.5.3) is <http://props.oss.hq.nasa.gov>; proposers without access to the Web or who experience difficulty in using this site may contact Ms. Debra Tripp (E-mail: [deb.tripp@hq.nasa.gov](mailto:deb.tripp@hq.nasa.gov)) for assistance. Hard copies of the proposals are to be delivered to:

ROSS-99 NASA Research Announcement  
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