

A.1.10 TERRESTRIAL PLANET FINDER/FOUNDATION SCIENCE

1. Scope of Program

The Terrestrial Planet Finder/Mission Foundation Science (TPF/FS) program solicits basic research proposals to conduct scientific investigations in support of the future Terrestrial Planet Finder (TPF) mission within the Astronomical Search for Origins theme of the Office of Space Science. Investigations are solicited that provide: i) the scientific data and theoretical framework required to define the nature and scope of the TPF mission; ii) the scientific data and theoretical framework required to refine the TPF target list; and iii) the theoretical background required to plan the mission and to interpret the data obtained. Further information about the concept for the TPF mission may be found at http://planetquest.jpl.nasa.gov/TPF/tpf_index.html.

A nonexclusive list of some of the research objectives appropriate for proposals to this TPF/FS program, in unprioritized order, are:

- 1) Searches for planets by means of any proven technique (e.g., radial velocity measurements, transits, micro-lensing, high resolution imaging, etc.) around a variety of types of stars, including solar, low and high mass, young, and highly evolved;
- 2) Characterization and theoretical understanding of gas giant planets found around other stars;
- 3) Observational and/or theoretical studies of the composition and dynamics of zodiacal and exo-zodiacal dust, including evidence for cometary material around stars;
- 4) Theoretical and/or observational investigations of the properties of the early solar system as it may have related to the formation and evolution of habitable environments;
- 5) Theoretical studies relevant to obtaining a more accurate estimate of the fraction of solar-type stars that may harbor terrestrial planets in the habitable zone, including studies of planet formation and migration scenarios in a variety of environments, as well as investigations of dynamical stability of various orbital configurations;
- 6) Measurement of the properties of potential TPF target stars to assess their suitability for the interpretation of TPF results (note that while a long term program of new observations and theory may be required to determine and/or derive these properties, such activities may be possible only via other NASA programs such as the Space Infrared Telescope Facility (SIRTF) or the Keck Interferometer; however, it is outside the scope of this TPF/FS program to solicit proposals for new observations with these other NASA facilities, proposals for which are solicited through other program announcements); and
- 7) Development of a long-term archive of the key observational data and derived parameters in a manner readily usable by the larger community of interested researchers.

Note that proposals to this program may also include the development of facilities and/or instrumentation that directly enables the proposed execution of any of proposed activities subject to the budgetary constraints given below.

To enable the NASA Office of Space Science to properly evaluate the relevance of proposals submitted to its programs, as well as track its progress towards achieving its goals as mandated by the Government Performance Review Act (GPRA), all research supported by NASA's programs must now demonstrate its relationship to NASA Goals and Research Focus Area's (RFA's) as stated in the latest version of its Strategic Plan (follow links from the Web site <http://spacescience.nasa.gov/>); see also the discussion in Section 1 of the *Summary of Solicitation* of this NRA. Therefore, all proposers to this program element are asked to state their perception of this relevance in terms of the Goals, Science Objectives, and RFA's given in Table 3 found in the *Summary of Solicitation*. In particular, this program element is designed to help fulfill RFA's 2(a) and (b), and RFA's 3(a), (b), (c), and (d) for Goal II of the Astronomical Search for Origins science theme.

2. Programmatic Information

2.1 Funding

It is expected that the funding level for this program for Fiscal Year 2004 will be approximately \$1.4M for the support of 6-10 research investigations for periods of performance of up to three years. Pending the submission of proposals of adequate merits, it is expected that the selected tasks may range from \$50K per year for very specific, small programs, to as much as \$750K per year for larger activities, such as large-scale sky surveys that involve the development of new instrumentation, extensive archiving activities, and/or an indepth theoretical investigations.

2.2 Connection to the Program Element A.2.4, entitled "Origins of Solar Systems"

Certain elements of this TPF/FS program directly complement the "Origins of Solar Systems" program solicited as Program Element A.2.4 in this NRA. Therefore, applicants to this TPF/FS program must specifically identify and state the relevance of their proposed activities to the TPF mission, whereas proposals of a more general nature that are not specifically aimed at the TPF mission objectives should be submitted to the "Origins of Solar System" program element of the NRA.

2.3 Proposal Preparation and Submission

The *Summary of Solicitation* of this NRA points out that NASA Headquarters now uses a single, unified set of instructions, entitled *NASA Guidebook for Proposers Responding to NASA Research Announcements*, that provides detailed guidance for the preparation and submission of proposals to most of its NRA's. By reference, the current edition, *Guidebook for Proposers– 2003*, is incorporated into this Office of Space Science solicitation and is accessible by linking through the menu item "Helpful References" at

the Web site <http://research.hq.nasa.gov/research.cfm> or it may be directly accessed at <http://www.hq.nasa.gov/office/procurement/nraguidebook/>. Proposers to this Program Element are urged to familiarize themselves with this document, in particular its Chapters 1, 2, and 3, before preparing a proposal. This NRA's *Summary of Solicitation* also contains important instructions for the electronic submission of both a *Notice of Intent* (NOI) to propose, as well as a proposal's *Cover Page/Proposal Summary* that also includes a required *Budget Summary* for the proposal, and the mailing address for the submission of the hard copies of proposals.

2.4 Schedule

The schedule for the electronic submission of Notices of Intent (NOI's) to propose, which are not required but encouraged, and for the hard copies of the proposals is:

- NOI Desired Due Date: April 11, 2003
- Proposal Deadline (4:30 p.m. EDT): June 13, 2003

2.5 Point of Contact

Questions about this program element may be directed to the cognizant Program Officer:

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