

## APPENDIX D. ASTROPHYSICS RESEARCH PROGRAM

### D.1 ASTROPHYSICS RESEARCH PROGRAM OVERVIEW

#### 1. Introduction

The objectives of research solicited in program elements described in Appendices D.2 through D.8 of this NRA are focused on achieving the goals of the Science Mission Directorate's Astrophysics Research Program as defined in *The Science Plan for NASA's Science Mission Directorate (2007-2016)* (hereafter the *NASA Science Plan* available at <http://nasascience.nasa.gov/about-us/science-strategy>). Proposers to the elements described in Appendix D are encouraged to read this *NASA Science Plan* to gauge the relevance of their research to NASA.

The program elements are described below. Abstracts of previously selected investigations may be found online at <http://nspires.nasaprs.com/>.

#### 2. Astrophysics Data Analysis

The Astrophysics Data Analysis program (Appendix D.2) supports the broad range of data analysis efforts relating to past or current NASA astrophysics space missions regardless of the physical phenomena studied. Since there are changes to the type of research solicited under this program element of the NRA, interested proposers are urged to read Appendix D.2 carefully to ensure that the research that they are proposing is appropriate.

#### 3. Astrophysics Research and ~~Enabling Technology~~ Analysis [Corrected, November 2, 2011]

The Astrophysics Research and **Analysis** program (Appendix D.3) supports investigations in the areas of suborbital flights, detector development, supporting technology development, laboratory astrophysics, and limited ground based observing. Basic research proposals in these areas are solicited for investigations that are relevant to NASA's programs in astronomy and astrophysics, including the entire range of photons, gravitational waves, and particles of astronomical origin.

#### 4. Astrophysics Theory

The Astrophysics Theory program (Appendix D.4) supports theoretical investigations or modeling of the astrophysical phenomena targeted by past, current, or future NASA astrophysics space missions. It no longer supports laboratory work related to NASA strategic goals in gravitation and fundamental physics – those efforts are now supported in the Astrophysics Research and **Analysis** program (**APRA**; Appendix D.3). Theoretical work pertaining to atomic and molecular astrophysics and other topics directly related to Laboratory Astrophysics should also be proposed to the Astrophysics Research and **Analysis** program (Appendix D.3).

## 5. Astrophysics Guest Investigators

Three program elements support science investigations that require and/or support new data obtained with currently operating NASA astrophysics space missions. Guest investigator programs are included for the Swift gamma-ray burst explorer (Appendix D.5), the Fermi Gamma-ray Space Telescope (Appendix D.6), and the Kepler mission (Appendix D.7). Guest investigator programs for the Hubble Space Telescope (<http://www.stsci.edu/>), the Chandra X-ray Observatory (<http://cxc.harvard.edu/>), and the Spitzer Space Telescope (<http://www.spitzer.caltech.edu/>) are solicited separately by the respective science centers of those missions.

## 6. Strategic Astrophysics Technology

The Strategic Astrophysics Technology program (Appendix D.8) supports focused development efforts for key technologies to the point at which they are ready to feed into major missions in the three science themes of the Astrophysics Division: Exoplanet Exploration, Cosmic Origins, and the Physics of the Cosmos. This program is specifically designed to address middle technology readiness level (TRL) “gaps” between levels 3 and 6: the maturation of technologies that have been established as feasible, but which are not yet sufficiently mature to incorporate into flight missions without introducing an unacceptable level of risk.

## 7. Origins of Solar Systems

The portion of this program that relates to the detection and characterization of planetary systems that is directly tied to the NASA strategic goal to search for Earth-like planets is solicited in the program element described in the Origins of Solar Systems program (Appendix E.3).

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