



# **The Explorer Program**

Presented to

**Astrophysics Subcommittee**

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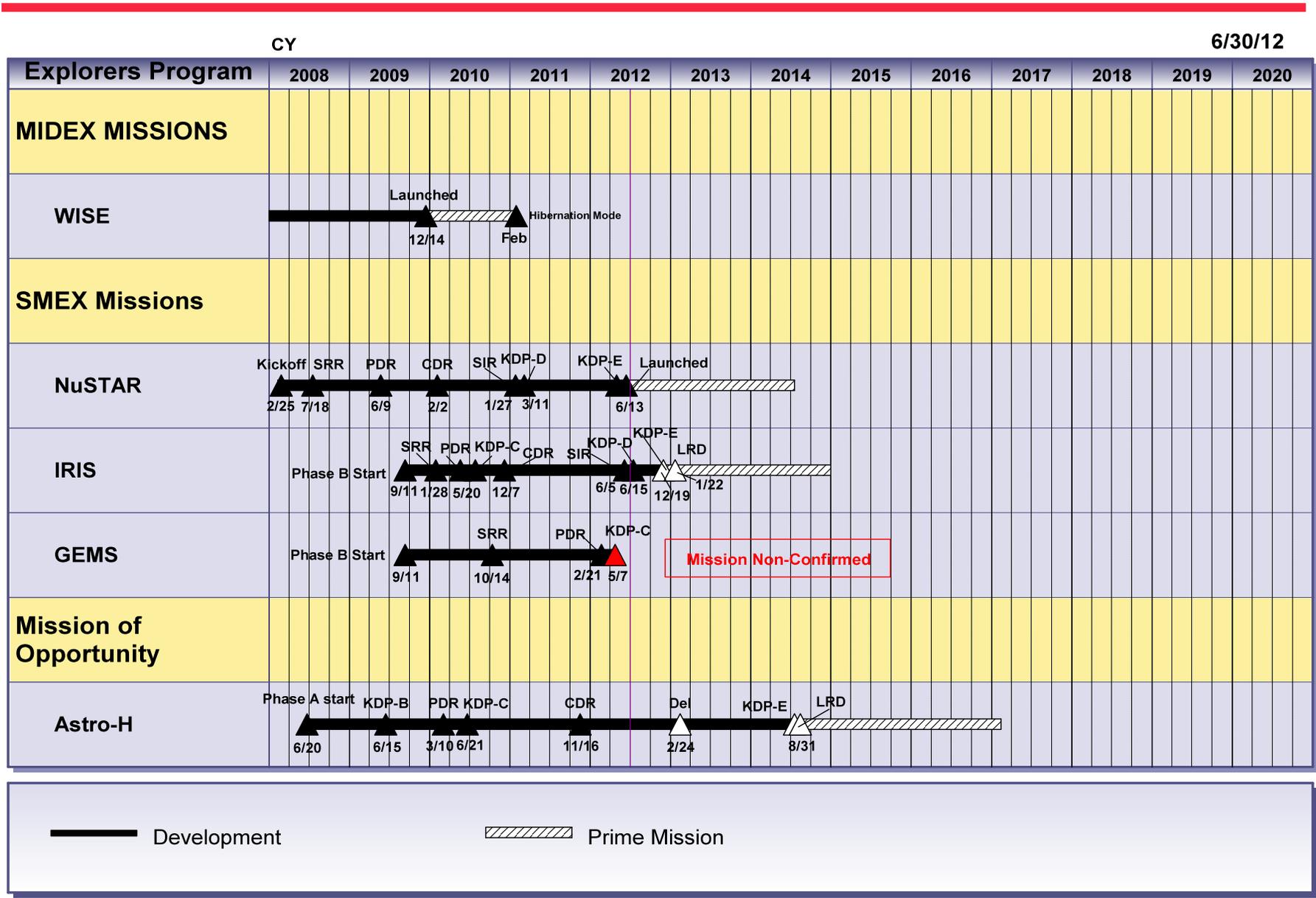
# Program Description

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- The Astrophysics Explorer program provides **frequent flight opportunities** for world-class scientific investigations from space to address astrophysics goals.
- These investigations target **focused science topics** that augment strategic missions and fill important science gaps in the prescribed program.
- **Highly competitive selection** ensures that the most current and best strategic science will be accomplished.
- Full missions can either be Medium Explorer (**MIDEX**), Explorers (**EX**), or Small Explorers (**SMEX**).
- A Missions of Opportunity (**MO**) space science investigation may be an instrument flown as part of a non-NASA space mission, a Partner MO, a Small Complete Mission, or a New Mission using Existing Spacecraft. U.S. Participating Investigators may also be solicited via ROSES.



# Current Missions





# Current Solicitations

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- **2011 Explorer (EX) and Mission of Opportunity (MO)**
  - Two EXs and Two MOs are in Phase A:
    - FINESSE – Fast Infrared Exoplanet Spectroscopy Survey Explorer
    - TESS – Transiting Exoplanet Survey Satellite
    - NICER – Neutron star Interior Composition ExploreR
    - GUSSTO – Gal/Xgal U/LDB Spectroscopic/Stratospheric Terahertz Observatory
  - Concept Study Reports due Sep 21, 2012
  - Final downselect 1 EX & 1 MO, target Spring 2013
  - EX launch targeted for late 2016/early 2017;
  - MO launch targeted for 2017



# Current Solicitations

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- **2012 Astrophysics Mission of Opportunity**
  - SALMON-2 PEA release late summer/early fall 2012
  - No draft PEA will be released
  - The current planning is for the selection process to be done in one step with no competitive downselect.
  - Categories of MO solicited:
    - Partner Mission of Opportunity (PMO). Partner MOs for which the parent mission is either of ESA's Euclid or JUICE missions are not solicited in this call.
    - Small Complete Missions (SCM), including investigations requiring flight on Ultra-Long Duration Balloons (ULDB) or the International Space Station
    - New Missions using Existing Spacecraft (NMES)
    - USPI through ROSES
  - Policies in the solicitation will be similar to the policies in the most recent Explorer Mission of Opportunity solicitation
  - Access to space provided by NASA for ISS & ULDB



# Current Solicitations

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- Final downselect target Summer 2013
- MO flight ~ 2017 or 2018 if SCM
- PI-Managed Mission Cost Cap is \$60M, or \$30M for an ULDB mission, in FY2013 dollars for Phases A-E
- The currently approved Explorer Program planning budget is sufficient to select and execute one MO at \$60M, or two MOs if both are ULDB missions or other proposed investigations well below the \$60M PI-managed cost cap.
- E/PO is required – minimum of 1% of total mission cost, included in the PI-Managed Mission Cost Cap
- Student Collaborations allowed – incentive of 1% of the PI-Managed Mission Cost Cap provided
- Science Enhancement Options (SEOs) are allowed



# Decadal Survey Recommendation

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- The committee therefore recommends, as its second priority in the large category of space-based projects, that NASA should support the selection of **two new astrophysics MIDEX** missions, **two** new astrophysics **SMEX missions**, and at least four astrophysics MoOs over the coming decade.
- AOs should be released on a predictable basis as close to annually as possible, to **facilitate Missions of Opportunity**.
- Further, the committee encourages **inclusion of suborbital payload** selections, if they offer compelling scientific returns.
- The placement of this recommendation in the large category reflects the decade's total cost of the program and the committee's view that expanding the **Explorer program is essential** to maintaining the breadth and vitality of NASA's astrophysics program.



# ApD Explorers Plan

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Our current planning supports the following schedule, assuming that GEMS is terminated and its funding remains in the Explorer Program.

Late CY2013 AO – SMEX only

- Cost caps and dates TBD by fall 2012
- Launch ~ 2019-2020

2015 AO – EX Mission and 1 MO

- Launch ~ 2022



# Astrophysics Program Content

	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
				<i>(FY14-17 estimates are notional)</i>			
<u>Astrophysics Explorer</u>	<u>100.0</u>	<u>112.2</u>	<u>75.1</u>	<u>134.3</u>	<u>133.9</u>	<u>157.0</u>	<u>165.6</u>
Nuclear Spectroscopic Telescope Array (NuSTAR)	36.1	11.8	4.7	4.4			
Gravity and Extreme Magnetism	23.0	63.2	46.4	32.9	2.7	0.2	
<u>Other Missions and Data Analysis</u>	<u>41.0</u>	<u>37.2</u>	<u>24.1</u>	<u>97.1</u>	<u>131.2</u>	<u>156.8</u>	<u>165.6</u>
Astro-H (SXS)	16.9	16.2	4.4	1.8	1.0	0.9	
SWIFT	6.3	4.3	4.4	4.4			
Wide-Field Infrared Survey Explorer	7.3	4.5	0.2				
Suzaku (ASTRO-E II)	1.8	0.3	0.3				
GALEX	6.2	0.6					
Wilkinson Microwave Anisotropy Pro (WMAP)	1.6	1.0					
Rossi X-Ray Timing Explorer (RXTE)	0.9						
Astrophysics Explorer Future Missions		3.1	10.6	85.6	124.0	149.6	159.3
Astrophysics Explorer Program Management		7.3	4.1	5.3	6.2	6.3	6.4