COR SATs:
Process and Status

Dominic Benford & Susan Neff
Chief Scientists, Cosmic Origins Program Office

Mario Perez, Richard Griffiths, Mike Garcia
Program Scientists, COR

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National Aeronautics and Space Administration
Cosmic Origins Program Office

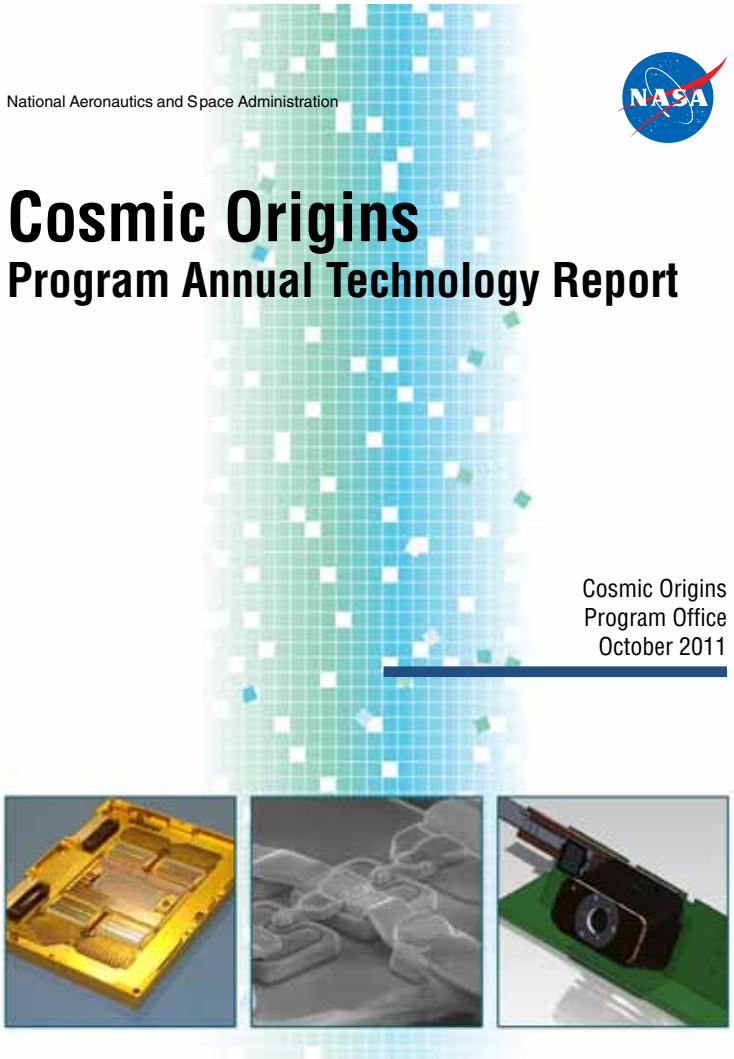
COR Technology Management

- Goal: improve the transparency and relevance of technology selections; provides the community a voice in the process; ensures open competition for funding
- Technology investments through merit-based review processes
- Decisions are informed by an ongoing discussion with our community through PAG & through extensive advocacy program
  - The community identifies technology needs each summer by working with the PAG or through individual input.
  - The Program Technology Management Board prioritizes these needs according to published set of criteria that includes assessments of urgency, relevance to defined missions and science objectives, and the broader programmatic context
  - These priorities are published each year in the Program Annual Technology Report, along with the status of technologies that were funded the previous year
- NASA has formed an "Astrophysics Technology Team" to coordinate across COR, PCOS, ExEP, SOFIA… APRA… SBIR…, OCT

Technology Buckets

- Strategic Astrophysics Technologies (SAT) – Competed via ROSES
  - Program priorities established and documented in the COR Program Annual Technology Report (PATR)
  - SAT call for proposals is informed by the priorities in PATR
  - Selection of the proposed technologies is based in part on the program priorities – thus consistency is ensured!
- Targeted Technologies (formerly "Directed")
  - Tied to a specific mission concept
  - Documented in a Technology Development Plan
  - Vetted through a TMB
- Unique Infrastructure – Directed/Competed
  - Capability that serves the community
  - Examples include optical test beds and detector development and characterization labs at NASA Centers or academic institutions

PATRs


National Aeronautics and Space Administration
Cosmic Origins
Program Annual Technology Report
Cosmic Origins
Program Office
October 2011

COR Priorities

- High-QE, large-format UV detectors – QE (>70%), large-format (>2k × 2k) detectors for operation at 100–400 nm or broader .
- Photon-counting, large-format UV detectors – For spectroscopy, high QE (>50%), very low-noise (<10^{-7} ct/pixel/s), large-format (>2k × 2k) photon-counting detectors for operation at 100–400 nm or broader .
- UV coatings –high reflectivity, high uniformity, and wide bandpasses, operating from visible to wavelengths below 100 nm .
- Ultra-low-noise far-IR direct detectors – For spectroscopy at wavelengths between ~30 μm and ~300 μm;
  NEP ≈ 3×10^{-21} W/√Hz arrayable in a close-packed configuration in at least one direction

SAT TCOP

- Changes to 2012 SAT call:
  - "Further information on the scope, activities and the 2011 Program Annual Technology Report (PATR) of the Cosmic Origins theme can be found in the website at: http://cor.gsfc.nasa.gov."
  - "In particular, **high-QE, large-format, photon counting and ultra- low-noise detectors from the extreme ultraviolet to the far-infrared** portion of the spectrum and their associated technologies (e.g., manufacturability, read-out electronics, packaging) will be critical to achieving the goals of future Cosmic Origins investigations. Because of the overlap in technology, improvements to near-infrared detectors **aimed at the WFIRST mission are included in this element.**"
  - "~~Detectors that work from the extreme ultraviolet to the submillimeter portion of the spectrum and their associated technologies (e.g., manufacturability, read-out electronics, packaging) will be critical to achieving the goals of future Cosmic Origins investigations.~~"
  - Funds: $3M → **$4M**; # selections from 3 to **4-10**; duration: 2yr → **3yr**.

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COR SAT Selections for FY12+

Proposal Title	PI	Institution	Area
Advanced UVOIR Mirror Technology Development for Very Large Space Telescopes	Phillip Stahl	Marshall Space Flight Center	*Advanced, Normal Incidence Optics*
High performance cross-strip micro-channel plate detector systems for spaceflight experiments	John Vallerga	UC Berkeley	*UV Detectors*
Enhanced MgF2 and LiF Over-coated Al Mirrors for FUV Space Astronomy	Manuel Quijada	Goddard Space Flight Center	*Ultraviolet Coatings*

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COR SAT Selections for FY13+

Proposal Title	PI	Institution	Area
Ultraviolet Coatings, Materials and Processes for Advanced Telescope Optics	Kunjithapatham Balasubramanian	JPL	*UV Coatings*
Kinetic Inductance Detector Imaging Arrays for Far-Infrared Astrophysics	Jonas Zmuidzinas	Caltech	*Far-IR Detectors*
Improvement of the Performance of Near-Infrared Detectors for NASA Astrophysics Missions	Selmer Anglin	Teledyne	*UVOIR Detectors*
H4RG Near-IR Detector Array with 10 Micron Pixels for WFIRST	Bernie Rauscher	GSFC	*UVOIR Detectors*
(UV Detectors) – dependent on funds	TBA	TBA	*UVOIR Detectors*

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Technology Funding for FY-13 and Beyond

- Starting in FY-13, **both competed and targeted** technology funds will be awarded through a merit-based process (until specific mission concepts are selected to proceed with own technology development plan)
- A prioritization process has been put in place that
  - Informs the call for SAT proposals
  - Informs technology developers of the program needs
  - Guides selection of technology awards to be aligned with program goals
- Community inputs for technology needs solicited through
  - Program Analysis Group (in the room)
  - Chief Scientist for the Program Office (Benford & Neff)
  - Program Scientist at NASA headquarters (Griffiths, Garcia, Perez)
- Program priorities published in the Program Annual Technology Report (PATR)