

PCOS Program Office Perspective

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Role of PCOS Program Office

The PCOS Program Office acts as an implementation arm of Headquarters:

- Stewards the PCOS science objectives by supervising early concept studies, maturing enabling technologies, monitoring science goals during project and program implementation, and advocating within the larger community
- Manages a portfolio of operating missions, missions in development, mission concept studies, and technology development to achieve the PCOS science objectives.
- Provides programmatic support and oversight for missions from earliest concept phase through on-orbit operation and decommissioning including technical expertise, guidance, and independent assessments.
- Collects information from and disseminates information to the community

Co-located and coordinated with Cosmic Origins Program Office

Physics of the Cosmos Science Objectives

The Physics of the Cosmos (PCOS) Program explores the fundamental physical laws and properties of the Universe. Based on the Astro2010 report, the highest priority objectives include:

- Studying the nature of **Dark Energy** by mapping the expansion of the Universe and the growth of structure
- Testing the theory of **Inflation** by measuring the CMB polarization caused by the gravitational radiation produced during the epoch of inflation.
- Probing the properties of **Black Holes** and hence the theory of General Relativity using the x-ray emission from accreting gas, the multi-wavelength beams of radiation from jets, and the gravitational waves generated by merging black holes.

PCOS objectives also include investigating the nature of Dark Matter, the properties of matter at neutron densities, the origin of cosmic rays, and the mass of neutrinos.

Paths to Achieving Science Objectives

Dark Energy

- WFIRST SDT, in collaboration with the Project Office, is developing a reference mission design. Preliminary report due in summer of 2011. WFIRST is managed through ExEP Office.

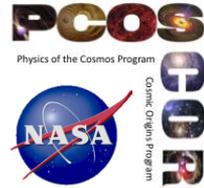
Inflation

- PCOS Program Office is preparing to initiate a mission concept study in late FY11 with input from the IPSAG

Black Holes – Gravitational Waves & X-ray Spectroscopy

- Exploring participation in possible ESA L-class mission as a minority partner
 - Projected ESA Schedule: Mission concepts submitted in late fall with downselect in February, 2012. Final selection expected in 2014 for a implementation start in 2015 and launch early in the 2020s.
 - One US representative to each ESA study team: Nick White for ATHENA, Tuck Stebbins for gravity wave experiment
- NASA-led mission concepts will be pursued in parallel
 - Process still TBD

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