

Physics of the Cosmos
Program Analysis Group:
Status Report

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APS – 12 Aug 2014 – NASA HQ

Topics

- Exec Committee Members
- IPSIG Whitepaper on CMB Polarization measurements
- GWSIG Activities
- XRSIG Related Activities
- PCOS Technology Gaps Activity
- Upcoming PhysPAG Activity

Members of Exec Comm

- Chair of the PhysPAG (Nousek) is drawn from the membership of the NAC Astrophysics Subcommittee
- Jamie Bock (Cal Tech/JPL) has accepted role of Vice-Chair for 2014, and will become Chair in Jan 2015
- Nousek to serve as ex officio member of PhysPAG in 2015

- PhysPAG Chair is assisted by an Executive Committee

- Executive Committee (from 2013, continuing to Dec 2014, or Dec 2015 [*])
- Jason Rhodes, JPL Liz Hays, GSFC
- Shaul Hanany, Univ. of Minnesota Guido Mueller, Univ. of Florida
- Jay Bookbinder*, Harvard-Smithsonian Angela Olinto*, Univ. of Chicago

- New Exec Committee members (from 2014, continuing to Dec 2016)
- Mark Bautz, MIT Neil Cornish, Montana State
- Rachel Bean, Cornell Eun-Suk Seo, Univ. of Maryland
- Mark McConnell, Univ. of New Hampshire

IPSIG Whitepaper on CMB Polarization

- BICEP2 team announced detection of B-mode polarization in CMB @ 2 mm
 - Angular scale consistent with gravitational waves during epoch of inflation
 - Measurement may set energy scale responsible for inflation
 - Note: uncertainties about Galactic dust emission raises question whether signal is cosmological – joint Planck/BICEP2 analysis to shed light
 - If BICEP2 result is primordial, then critical questions from the earliest Universe are now open to empirical measurement:
 - Did a single quantum field drive inflation?
 - If a single field changed this much, we may require a super-Planckian mass
 - Are there new symmetries associated with such a field?
 - Whitepaper summarizes current NASA & global CMB planned measurements
 - Proposes Roadmap to support critical activities including:
 - APRA & SAT grants should clarify size of cosmological component
 - If near-term studies confirm cosmological origin, then CMB mission needed
 - US participation in international mission? Mission study for NASA mission?
- IPSIG also sent letter of concern about completing Planck data analysis

GWSIG Activities

- U.Florida, Gainesville hosted 10th LISA Symposium – 150 participants
 - Presentations on LISA Pathfinder & unique need for space GW detectors
 - Discussed synergies between GW space mission & LSST, Athena, WFIRST
 - See: <http://www.phys.ufl.edu/lisasymposiumx/program.html>
- GWSIG organized meeting at Symposium
 - Discussed eLISA schedule & milestones, options for US participation
 - Strategy for upcoming Decadal Survey
 - Open mic for concerns from US & international scientists about gap from Pathfinder to eLISA or other US future prospects
- GWSIG members produced technology concepts for future development

Update on L2 Activities

- Update on L2/Athena
 - Athena SST formed
 - Randall Smith (CfA) included in team of 10 scientists as US member
 - Rob Petre (GSFC) is ex-officio NASA Athena Study Scientist
 - Athena enters an Assessment Phase
 - Planned early 2015 AO for focal plane instruments & ground segment
 - NASA is seeking involvement in Athena through potential hardware contribution
- XRSIG meeting at HEAD in Chicago, 18 August
 - Topics: Community & NASA perspective on US role in Athena
 - SMEX AO: Potential missions
 - Community strategy for the future

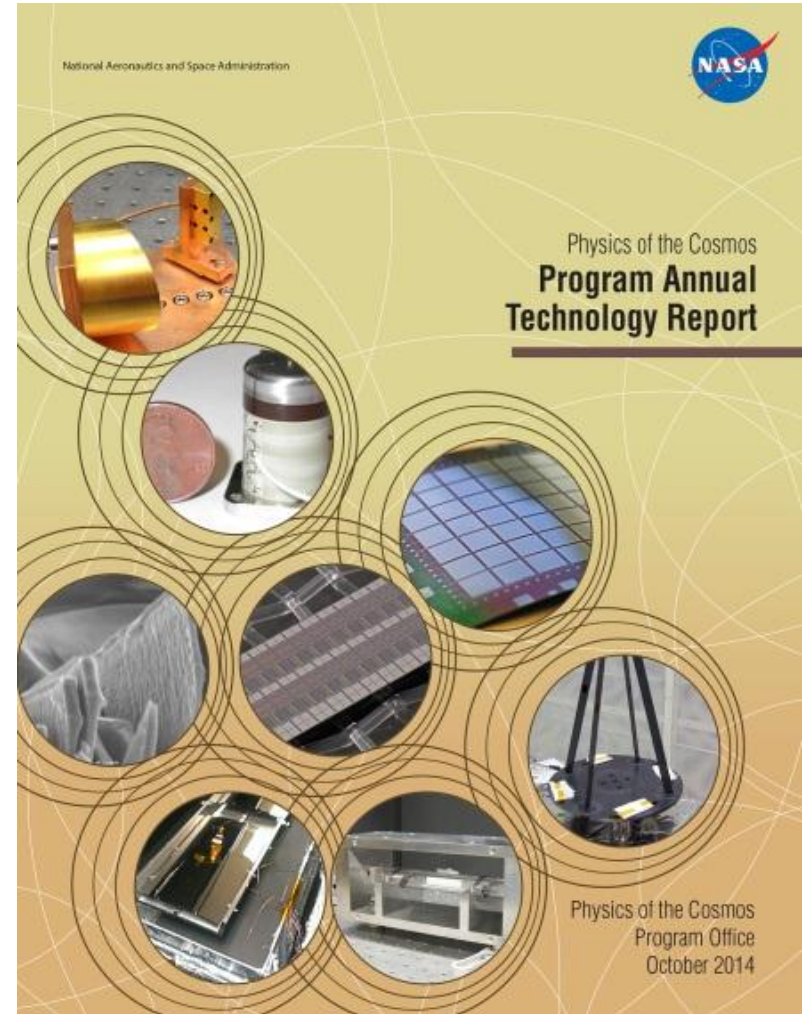
XRSIG Activities

- XRSIG meeting at HEAD in Chicago, 18 August
 - Topics: Community & NASA perspective on US role in Athena
 - SMEX AO: Potential missions
 - Community strategy for the future

PCOS Technology Gaps Activity

- PhysPAG and its related SIGs worked with PCOS Technology Development Manager, Thai Pham, to collect suggestions for technology gaps required to achieve the goals outlined in Astrophysics Implementation Plan
- 21 technology gaps (including some duplication) submitted in the process, highly focused on X-ray, Gravitational Wave and Inflation Probe technology gaps

Draft cover for 2014 PCOS PATR



PhysPAG at Future Meetings

- PCOS/PhysPAG will conduct a Town Hall at the Chicago IL HEAD meeting
 - 19 Aug 2014 (Tuesday)
 - Also XRSIG on Monday (18 Aug) & CosmicSIG on Tuesday (19 Aug)
- PCOS/PhysPAG will conduct a Meeting at the Seattle WA AAS meeting
 - 4 Jan 2015 (Sunday)
- PhysPAG will also have presences at various topical meetings:
 - GWSIG: LIGO-VIRGO Meeting, Stanford CA – 25 Aug 2014
 - IPSIG: CMB Planning Workshop, Minneapolis MN – 1 Sep 2014
 - GammaSIG: INTEGRAL Workshop, Annapolis MD – 15 Sep 2014
 - GWSIG: LIGO-VIRGO Meeting, Pasadena CA – 16 Mar 2015