

# Athena Science Study Team

Randall Smith  
US Representative

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1. Provide scientific oversight in the fields associated to the scientific theme “The hot and energetic Universe”, as described in the “Report of the Senior Survey Committee on the selection on science themes for the L2 and L3 missions in the Cosmic Vision programme” (available at <http://sci.esa.int/cosmic-vision/53261-report-on-sciencethemes-for-the-l2-and-l3-missions/#>)
2. Review and propose updates to the mission scientific requirements
3. Assess the scientific aspects of the mission performance
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# ASST Working Groups

It is expected that an Athena Science Team will replace the ASST after payload selection, with an updated remit. It is envisaged that the Working Group structure proposed here will continue supporting the new team, with the needed updates.

## **Remit of the Working Groups**

- At the request of the ASST, WGs will conduct studies on scientific or technical aspects that are required in support of Athena
- Advise the ASST in any necessary updates of the science requirements and all other relevant studies under the responsibility of the ASST
- Advise the ASST with respect to technical issues and trade-offs
- Promote Athena as a major astronomical observatory

# ASST Working Groups

- Each WG shall have a number of scientific and/or technically experienced members; appropriate nationality, field of expertise and gender balance shall be sought.
- WG members shall be appointed by the ASST. **In the case of scientists from USA institutions, they shall be encouraged to apply for WG membership to the ASST through NASA.**
- Appointments shall be for a fixed period of time, depending on the phasing of the project, and may be renewed. It is foreseen that the WG membership will go through a staggered renewal process, where up to 1/3 of its membership will be renewed each time, making sure that knowledge and appropriate balances are kept at all times.
- A WG chair shall be appointed among the ASST members by the Athena Lead Scientist, following agreement by the ASST, and for the same period (also renewable). WG co-chairs from the ASST or the community might be appointed following the same rules.
  - The WG chair shall be the primary interface between the WG and the ASST. She/he shall report to the ASST on the WG activities and will be the regular transmission channel of the ASST requests to the WG.
  - The WG chair and co-chairs shall call for WG meetings, lead the discussions, organise the WG structure, trigger and follow up the activities and prepare reports to be delivered to the ASST.

# Science Working Groups

## **SWG1 HOT UNIVERSE (Chair: A.C. Fabian, co-Chairs: T. Reiprich, T. Ohashi)**

SWG 1.1 The evolution of galaxy groups and clusters

SWG 1.2 The astrophysics of galaxy groups and clusters

SWG 1.3 AGN feedback in galaxy clusters and groups

SWG 1.4 The missing baryons and the warm-hot intergalactic medium

## **SWG2 ENERGETIC UNIVERSE (Chair: X. Barcons, co-Chairs: M. Cappi, L. Brenneman)**

SWG 2.1 Formation and growth of the earliest SMBH

SWG 2.2 Understanding the build-up of SMBH and galaxies

SWG 2.3 Astrophysics of feedback in local AGN

SWG 2.4 The close environments of supermassive black holes

SWG 2.5 Luminous Extragalactic Transients

## **SWG3: OBSERVATORY AND MULTI-WAVELENGTH SCIENCE (Chair: A. Decourchelle, co-Chairs: H. Matsumoto, R. Smith)**

SWG 3.1 Solar system and exoplanets

SWG 3.2 Star formation and evolution

SWG 3.3 End points of stellar evolution

SWG 3.4 The astrophysics of supernova remnants and the interstellar medium

SWG 3.5 Multi-wavelength working group

SWG 3.6 Atomic Data

# Mission Working Groups

**TWG4: TELESCOPE WORKING GROUP (Chair: R. Willingale, co-Chair: G. Pareschi)**

**MWG5: MISSION WORKING GROUP (Chair: J-W Den Herder, co-Chair: L. Piro)**

MWG 5.1 Ground Segment

MWG 5.2 Background

MWG 5.3 Inter-Calibration

MWG 5.4 End-to-end simulations

MWG 5.5 Advanced Analysis tools

MWG 5.6 GRB external triggers and TOOs

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# Athena Science Impact Exercise

*“Athena is currently in an Assessment phase. During this phase two design points for the mission are being examined. The first corresponds to the mission as proposed to ESA. The second is a modified version of the mission with a smaller outer radius for the mirror, and hence less effective area particularly at soft X-ray energies (<2 keV), which was studied in the ESA Concurrent Design Facility (CDF). The ASST, with assistance from its community-based Working Groups, has performed an assessment of the scientific performance of the two design points, which is summarized in”*

[http://athena2.irap.omp.eu/IMG/pdf/ASIE\\_final\\_public.pdf](http://athena2.irap.omp.eu/IMG/pdf/ASIE_final_public.pdf)

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# Documentation

- The ASST has weekly telecons (Friday at 8am) and has held 8 meetings, mostly at ESTEC in Noorwijk.
- Much of the discussion revolves around:
  - Mission Requirements (L1, L2a, L2b)
  - Mock Observing Plan
  - Calibration Plan
  - Organizing Science Ground Segment
    - Herschel-like? XMM-like? Other?
  - Commenting on Science Management Plan
    - i.e., GTO fractions, achieving mission science goals, etc

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