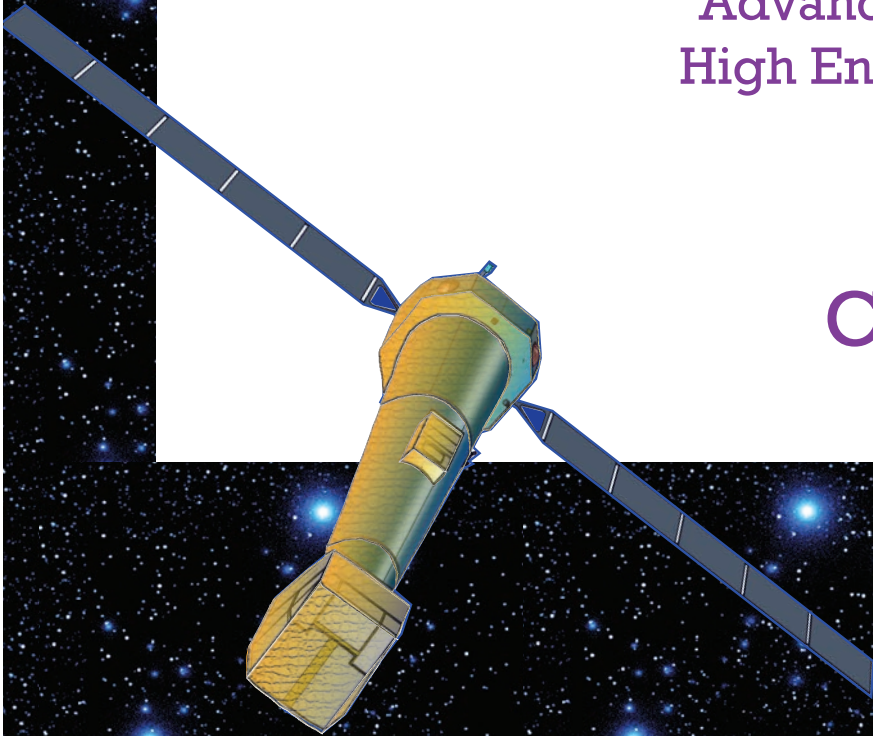


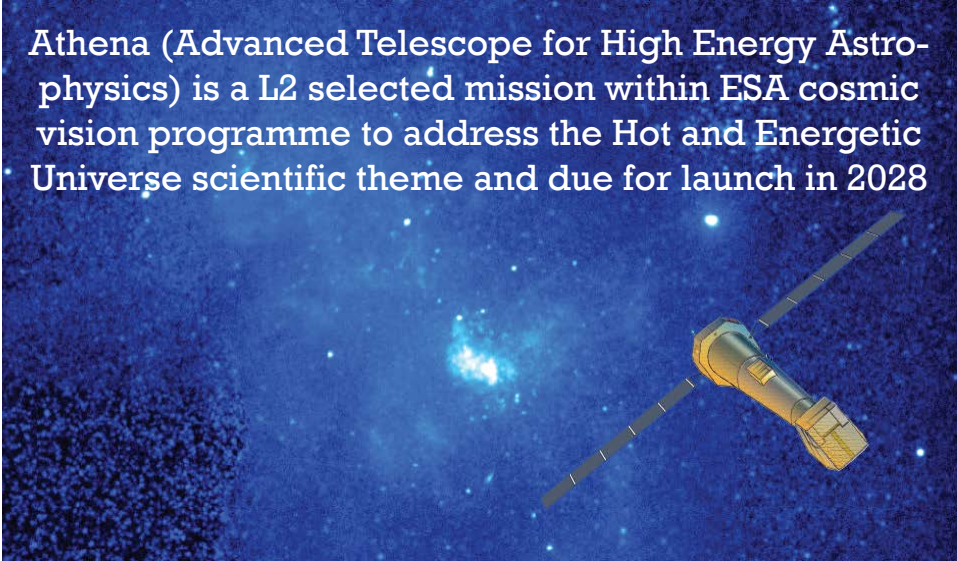
ATHENA:

Advanced Telescope for
High Energy Astrophysics

2017
Calendar



Athena (Advanced Telescope for High Energy Astrophysics) is a L2 selected mission within ESA cosmic vision programme to address the Hot and Energetic Universe scientific theme and due for launch in 2028



INSTRUMENTATION

Athena will consist of a large-aperture X-ray telescope with two focal-plane instruments: the Wide Field Imager (WFI) providing sensitive wide field imaging and spectroscopy and high count-rate capability and the X-ray Integral Field Unit (X-IFU) delivering spatially resolved high-resolution X-ray spectroscopy

Athena will study how ordinary matter assembles into groups and clusters of galaxies, determine its chemical enrichment across cosmic time, and characterise the missing baryons residing in intergalactic filamentary structures

As an observatory, Athena will offer vital information on high-energy phenomena on all classes of astrophysical objects, from solar system bodies to the most distant objects known

Athena will study the physics of accretion into compact objects, find the earliest accreting supermassive black holes and trace their growth even when in very obscured environments, and show how they influence the evolution of galaxies and clusters through feedback processes

Athena will have a fast target of opportunity observational capability, enabling studies of transient phenomena

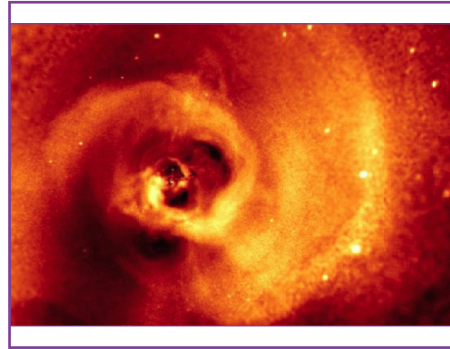
With its unparalleled capabilities, Athena will be a truly transformational observatory, operating in synergy with other large space-based observatories in the late 2020s (ALMA, E-ELT, SKA, etc)



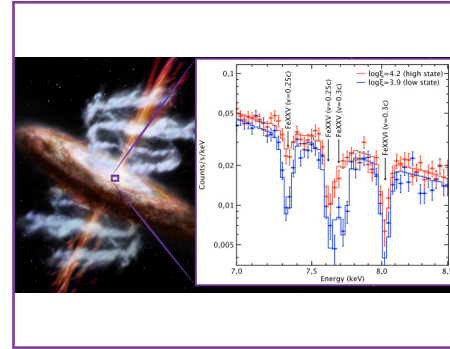
2017



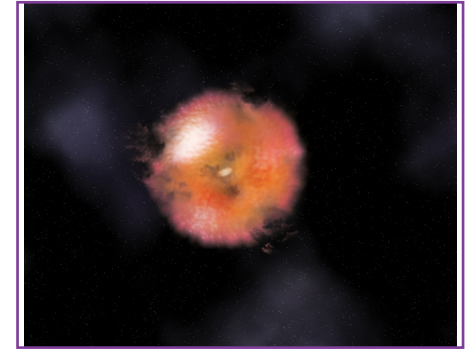
JANUARY



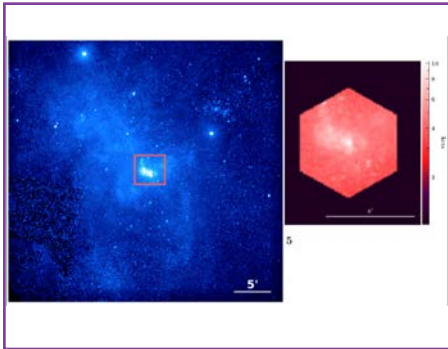
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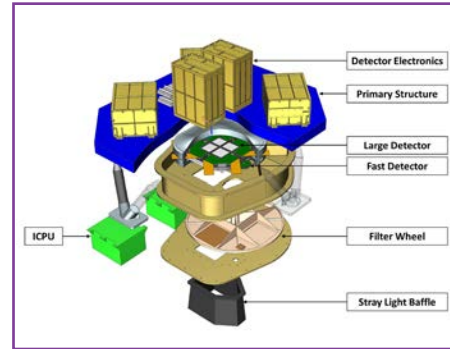
APRIL



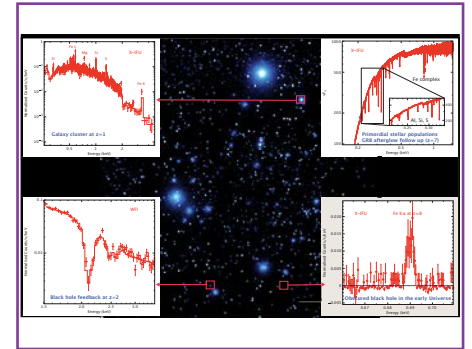
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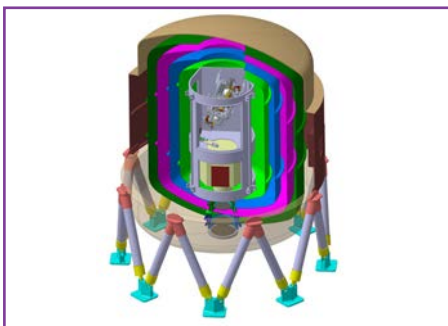
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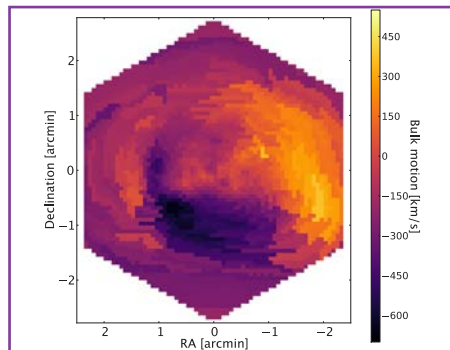
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AUGUST



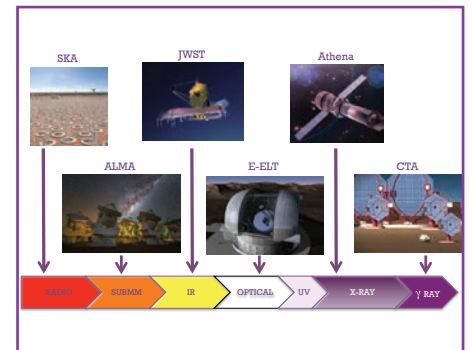
SEPTEMBER



OCTOBER



NOVEMBER



DECEMBER

Artistic impression of the Athena satellite observing the center of the Milky Way. The Athena instruments will be: the Wide Field Imager (WFI) providing sensitive wide field of view imaging and low-resolution spectroscopy and the X-ray Integral Field Unit (X-IFU) delivering spatially resolved high-resolution X-ray spectroscopy.

Credit: Athena team.



JANUARY 2017

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DECEMBER 2016

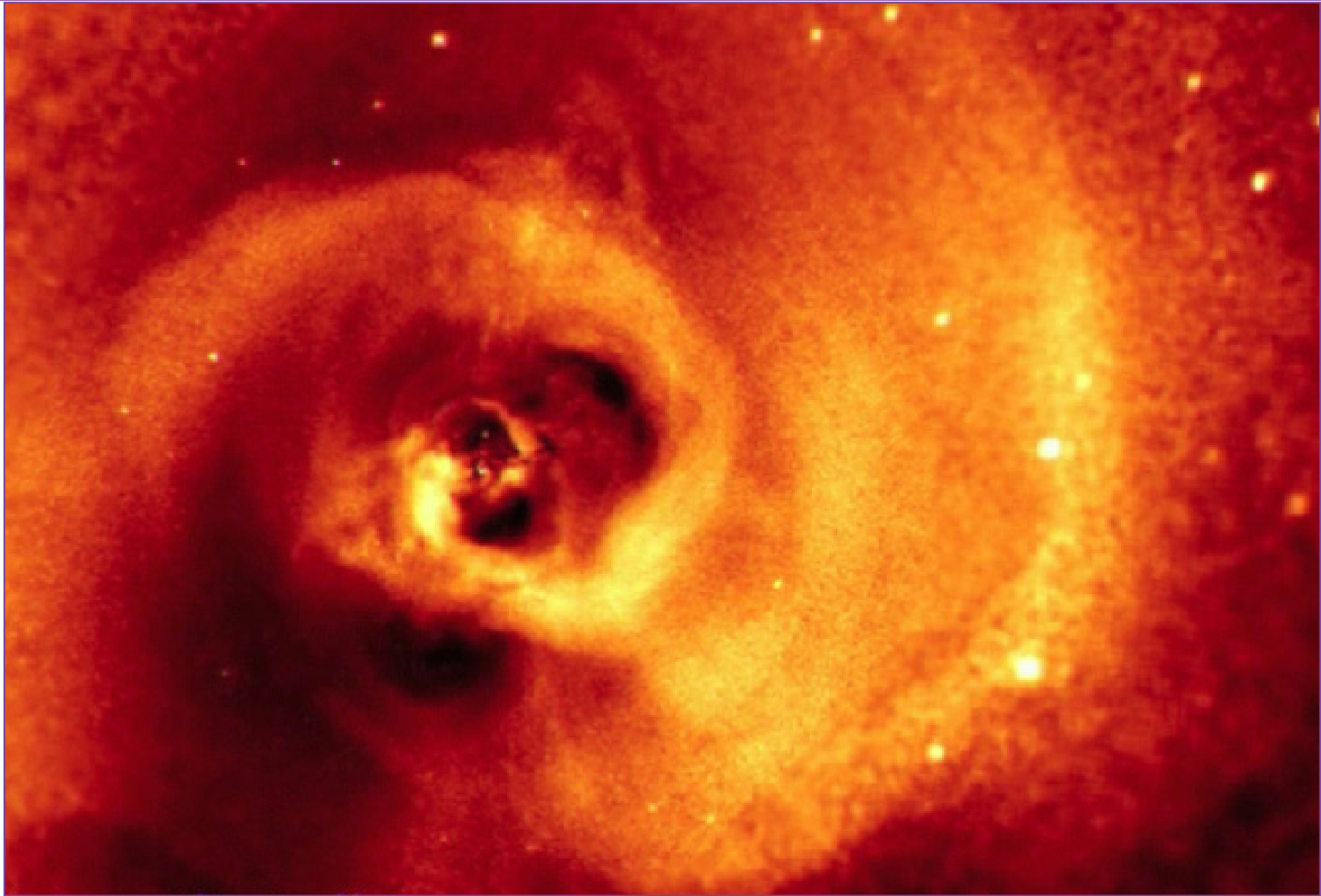
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FEBRUARY 2017

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Athena catching the beauty of the Perseus cluster of galaxies. It is one of the most massive structures in the known universe, containing thousands of galaxies immersed in a vast cloud of multimillion degree gas.
Credit: Athena team, based on a Chandra image matched to the angular resolution of Athena.



FEBRUARY 2017

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JANUARY 2017

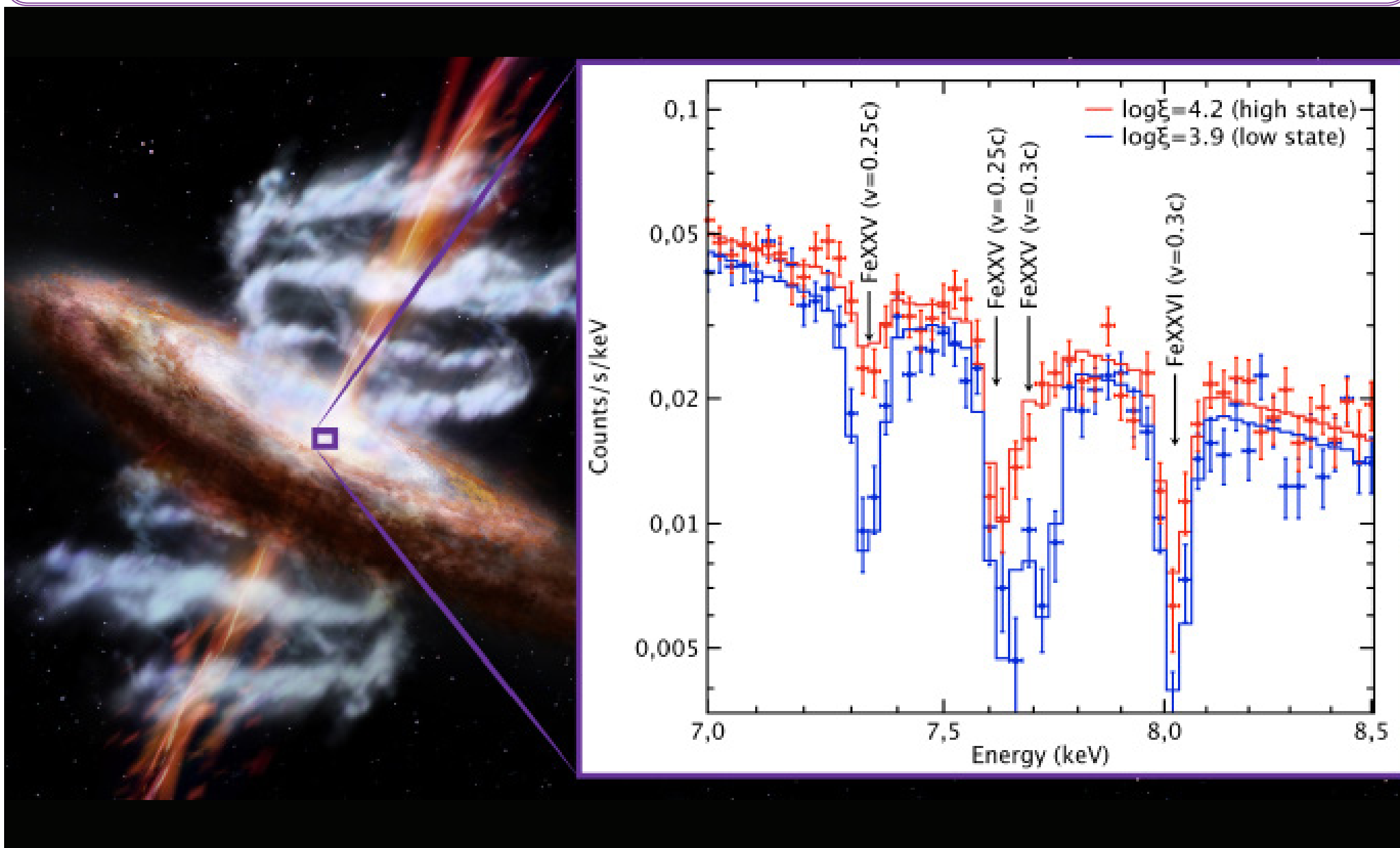
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MARCH 2017

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NOTES: _____

A system showing two types of X-ray winds. Left: Pictorial representation of the energy released by the SMBH at the center of a galaxy (surrounded by an accretion disc), via collimated (in orange-red) and uncollimated (white) winds. Right: Simulations of Athena X-IFU spectra resulting from two types of so-called “ultra fast outflows” with higher velocity, higher ionization than those winds, seen only above 6 keV. Credit: ESA/AOES Medialab.



MARCH 2017

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ATHENA

FEBRUARY 2017

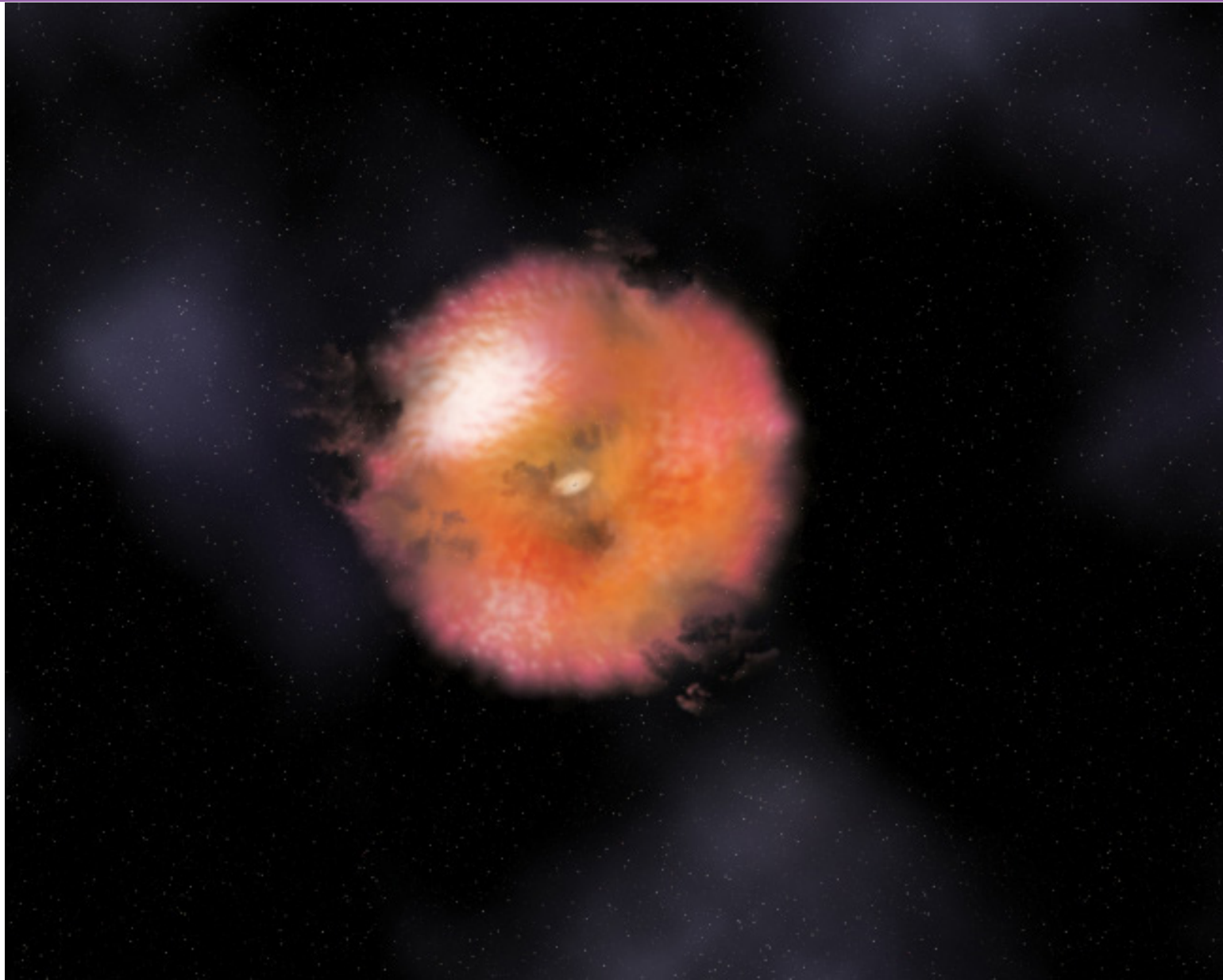
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APRIL 2017

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NOTES: _____

Artistic impression of material falling into a supermassive black hole in the centre of a galaxy (not to scale).
Credit: NASA/Aurore Simonnet, Sonoma State University.



APRIL 2017

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MARCH 2017

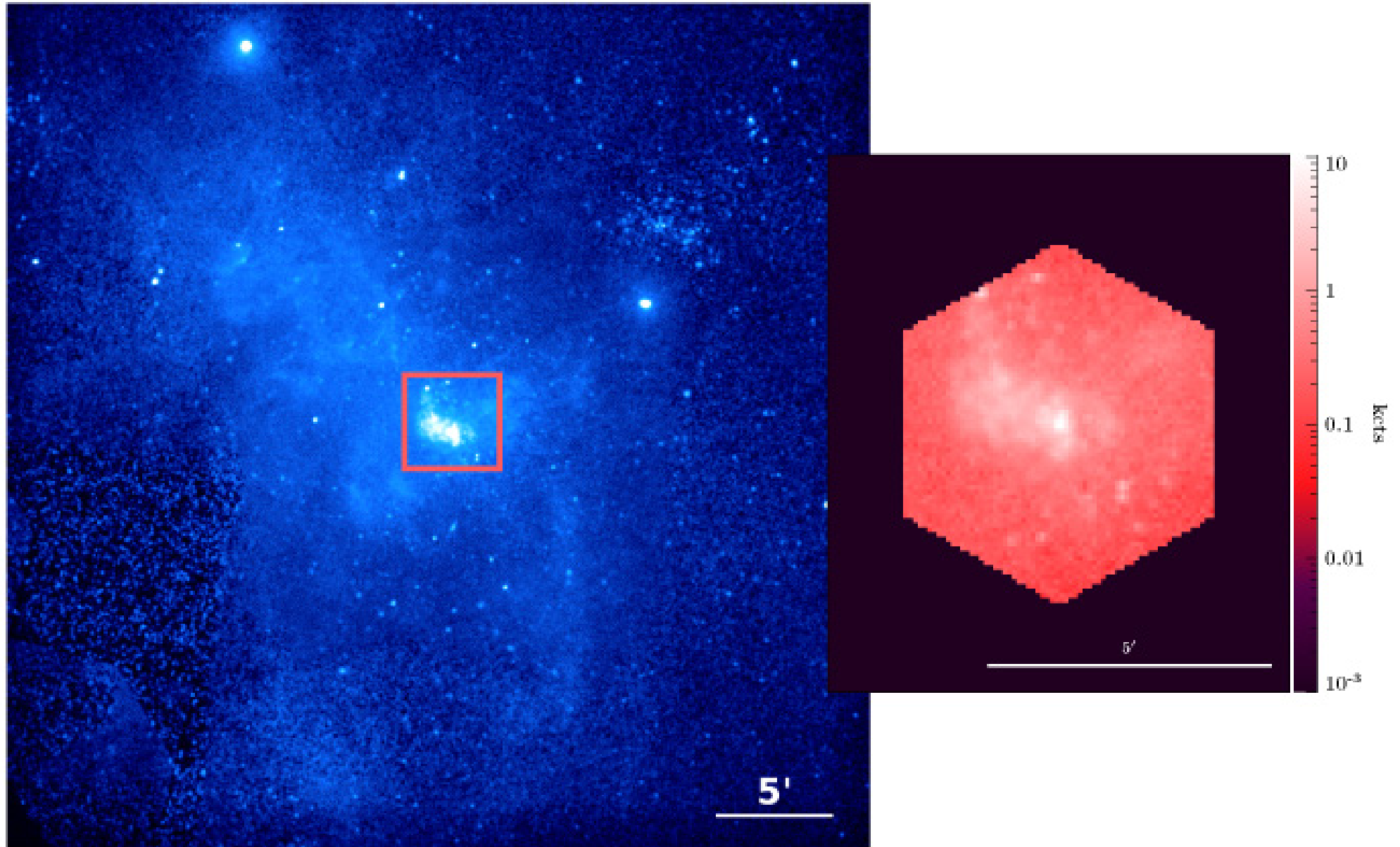
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MAY 2017

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NOTES: _____

Galactic Center Region: SIXTE simulations of 100ks-long staring observations with Wide Field Imager (left) and X-ray Integral Field Unit (right).
Credit: Athena Team.



MAY 2017

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APRIL 2017

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JUNE 2017

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Already a year with ACO and its activities supporting the Athena Community and public outreach.
 Happy Birthday ACO!
 Credit: ACO Team.

The screenshot shows the Athena X-ray Observatory Community Support Portal. At the top, there is a navigation menu with links: HOME, NEWS, MEDIA, CONTACT, ACTORS, RESULTS, OUTREACH, DONOR, and NEWS. Below the navigation is a large banner image of the observatory with the text "Track obscured accretion through the epoch of galaxy formation". Underneath the banner is a section titled "Latest activities & news" with a star icon. There are three news items: "Astronomical Telescopes Instrumentation" (dated 30 June 2016), "Athena widely discussed at the SPIE" (dated 30 June 2016), and "Hunting for hidden feeding monsters in galaxies" (dated 30 June 2016). Below these is a section titled "Advanced Telescope for High Energy Astrophysics" with a detailed description of the mission. At the bottom, there is a footer with "Athena Community Office", "Related Websites", and "Contact Us" information.

The screenshot shows the Athena Community Newsletter #1, dated June 2016. The header features the Athena logo and the title "Athena Community People". The main content includes a "Welcome" message, a section titled "The ATHENA (Integrated Activities for High Energy Astrophysical) project invites proposals for offers across the Athena X-ray Observatory", and a "Conferences 2016" section listing events like "Athena 2016" and "Athena X-ray Observatory (XRO) 4th Science Programme of Athena sessions on page 4". There is also a photo of a man and a quote from a researcher about the mission's goals.

A graphic for the Athena Community Newsletter #1, dated June 2016. It features the Athena logo and the text "ATHENA COMMUNITY NEWSLETTER #1" and "June 2016".

A collage of social media posts from the Athena X-ray Observatory. It includes a Facebook post about the mission, a Twitter post about a meeting, and a YouTube video titled "Hunting for Hidden Feeding Monsters in galaxies" and "Accretion of white dwarf debris onto black hole: X-ray flares".

JUNE 2017

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ATHENA

MAY 2017

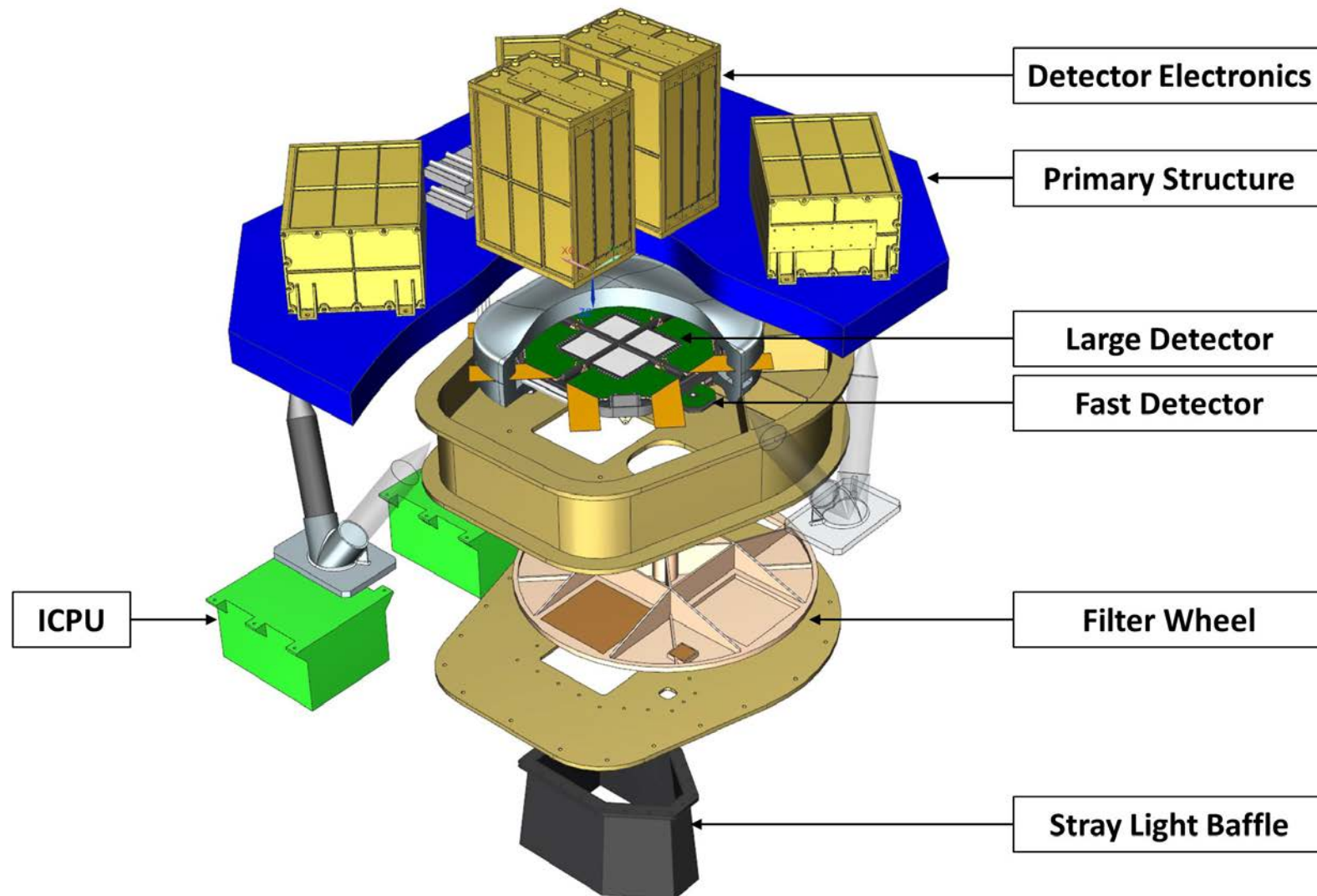
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JULY 2017

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Drawing of the Wide Field Imager with its main subsystems. X-ray photons are measured in either the 40'x40' Large Detector or the bright-source optimized Fast Detector.
Credit: WFI team.



JULY 2017

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JUNE 2017

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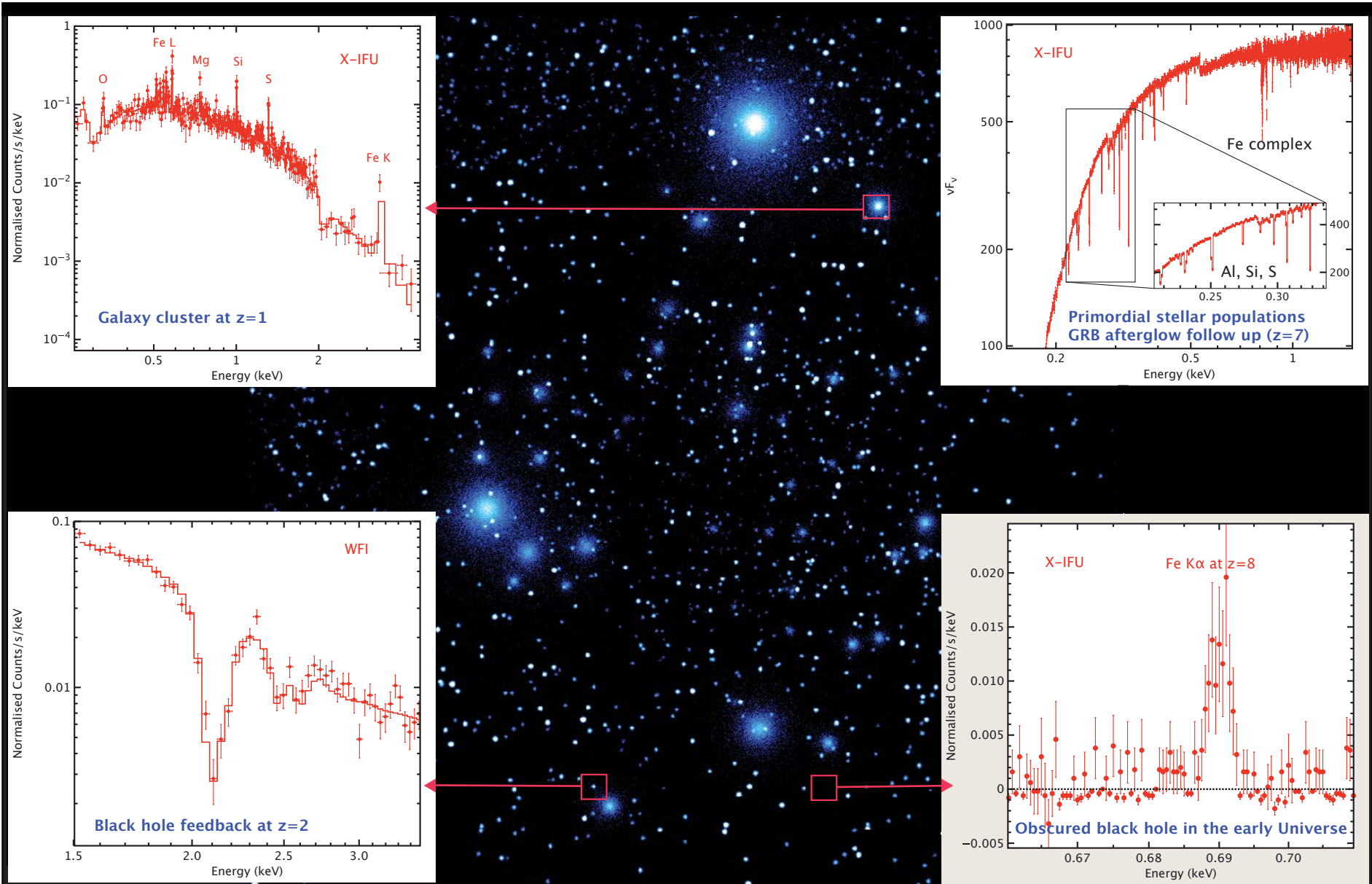
AUGUST 2017

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Athena looking into the deep Universe with its Wide Field Imager. A simulation based in a Chandra X-ray observatory real image of a region of the sky which lies in the Fornax constellation. This region is populated by over 2,000 X-ray sources, many of them are Active Galactic Nuclei lying farther than 9 billion light years away.

Credit: Athena team.



AUGUST 2017

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JULY 2017

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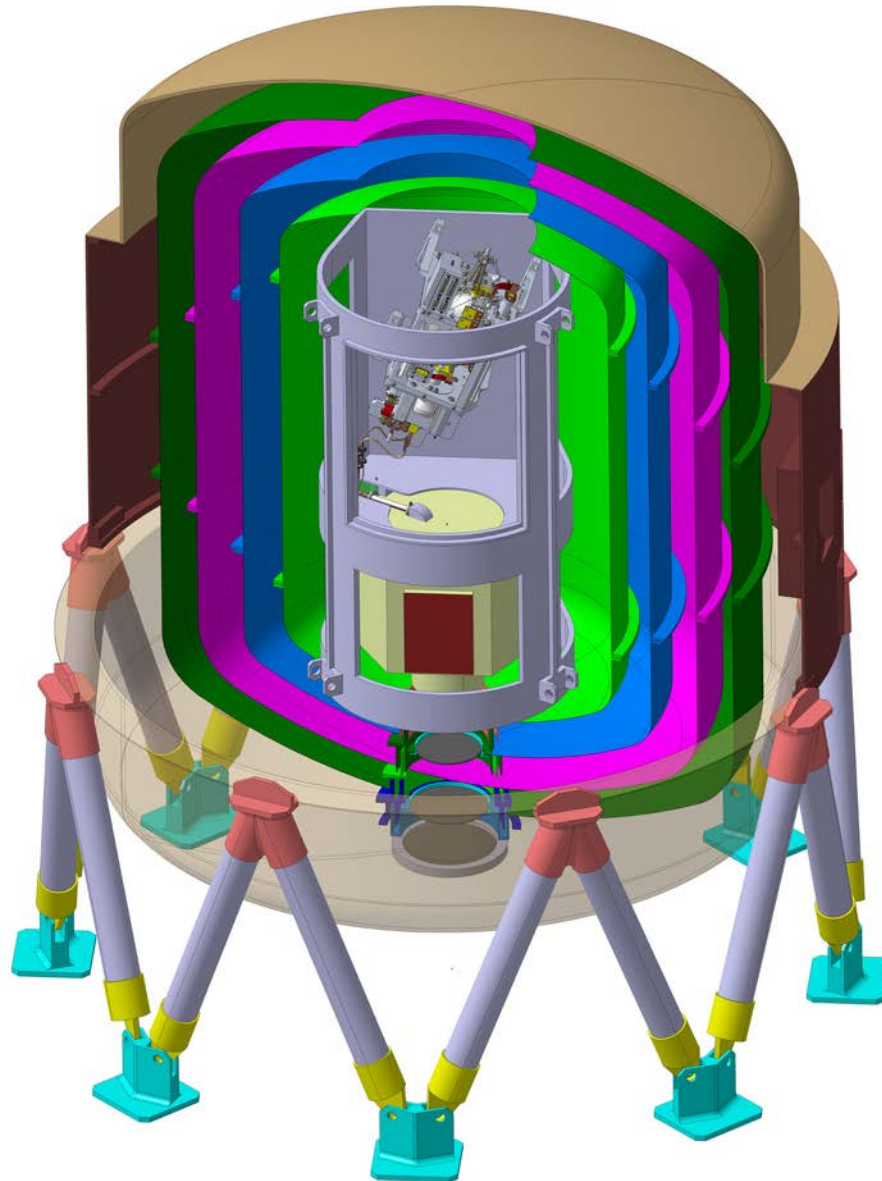
SEPTEMBER 2017

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NOTES: _____

Exploded view of the X-ray Integral Field Unit Dewar assembly highlighting the Sorption-Adiabatic Demagnetization Refrigerator at the top, the cold finger linked to the focal plane assembly below, the aperture cylinder, cooling shields in different colors and the supporting struts at the bottom.

Credit: CNES.



SEPTEMBER 2017

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AUGUST 2017

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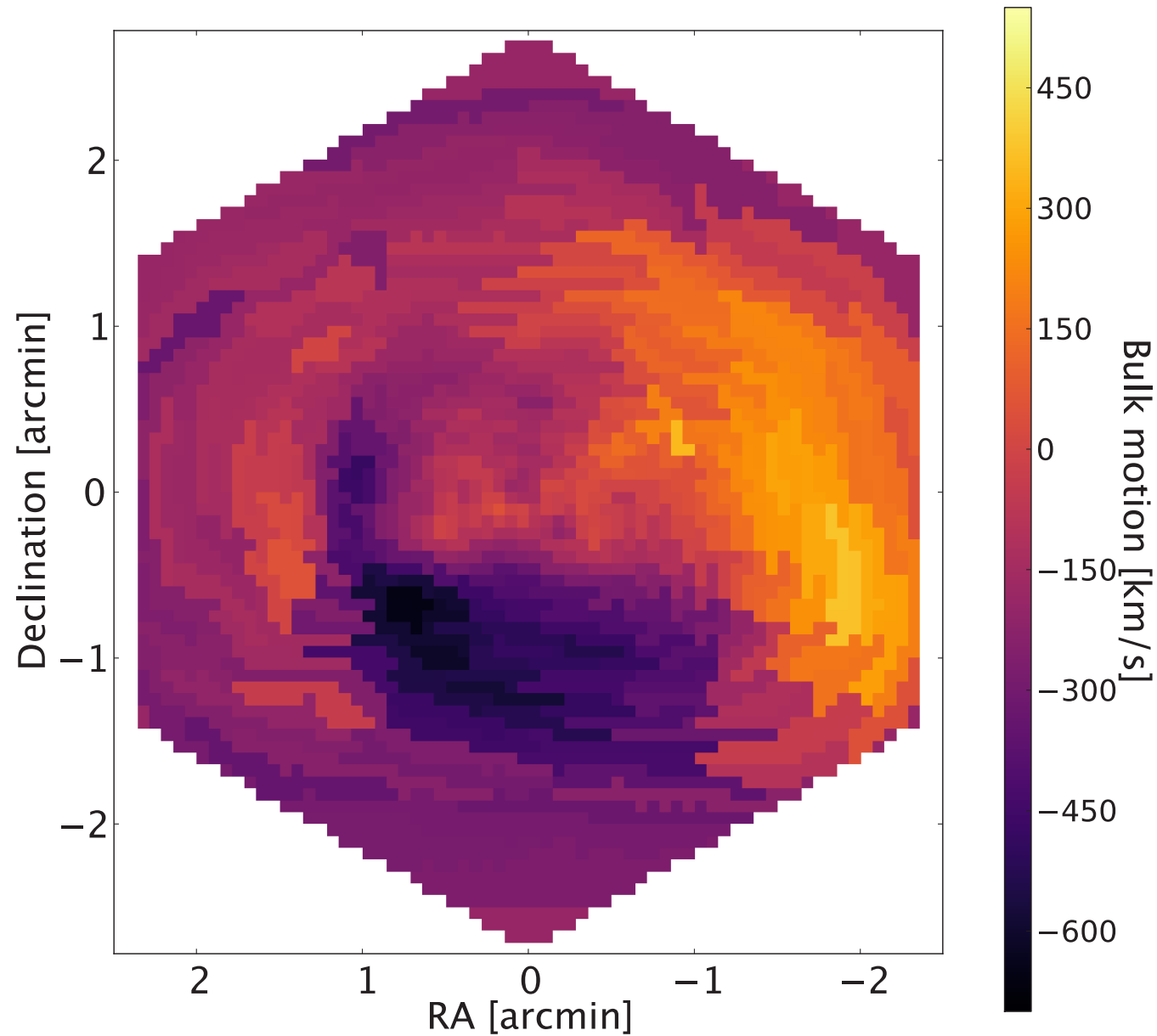
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Example of bulk motion mapping of the hot gas in galaxy clusters that will be possible with the Athena X-ray Field Unit (X-IFU) instrument. Figure reproduced from left panel of Fig 2 in Barret et al. 2016, Proc. SPIE. 9905, Space Telescopes and Instrumentation 2016: Ultraviolet to Gamma Ray, 99052F.

Credit: P. Peille, E. Pointecouteau, V. Biffi, E. Rasia, K. Dolag, S. Borgani, J. Wilms.



OCTOBER 2017

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SEPTEMBER 2017

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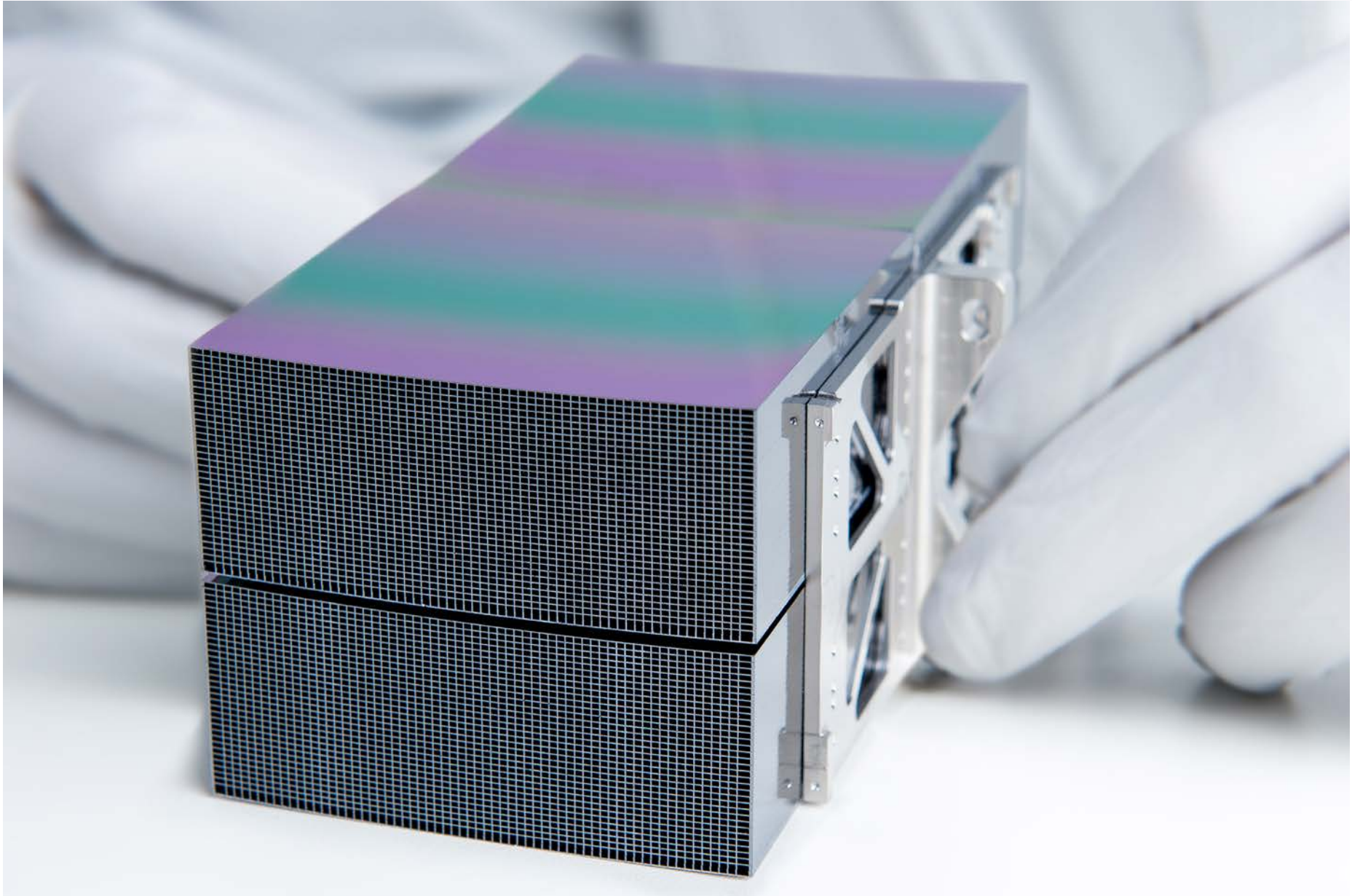
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Silicon Pore Optics mirror modules (one of them is shown in the picture) are made of super polished Si wafer plates. The plates are bent and stacked to the correct shape and then mounted in between two Invar brackets.

Credit: Cosine Research/ESA



NOVEMBER 2017

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OCTOBER 2017

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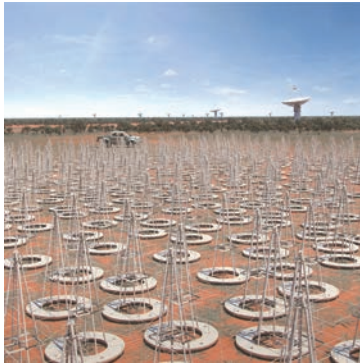
DECEMBER 2017

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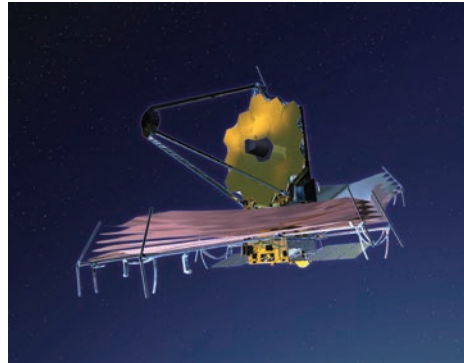
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Major astronomical facilities of the observational landscape coexisting with the Athena mission.
Credit: SKA, ESO, NASA, CTA, Athena Team.

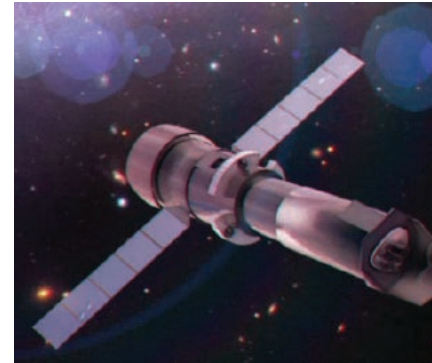
SKA



JWST



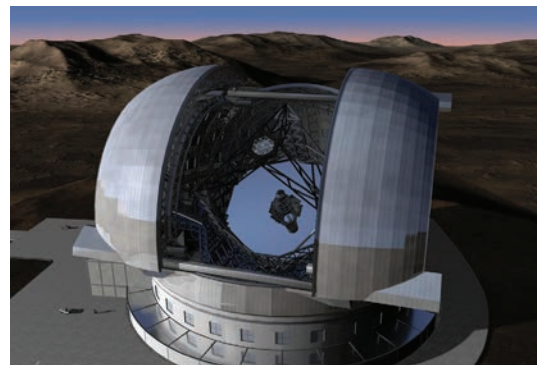
Athena



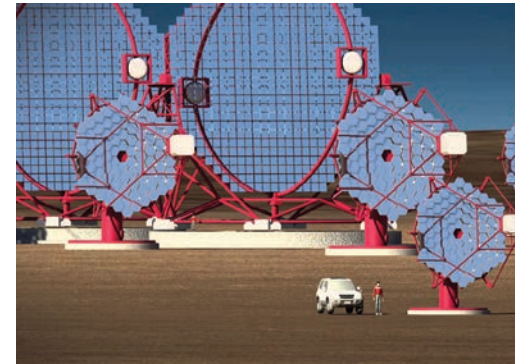
ALMA



E-ELT



CTA



DECEMBER 2017

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NOVEMBER 2017

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JANUARY 2018

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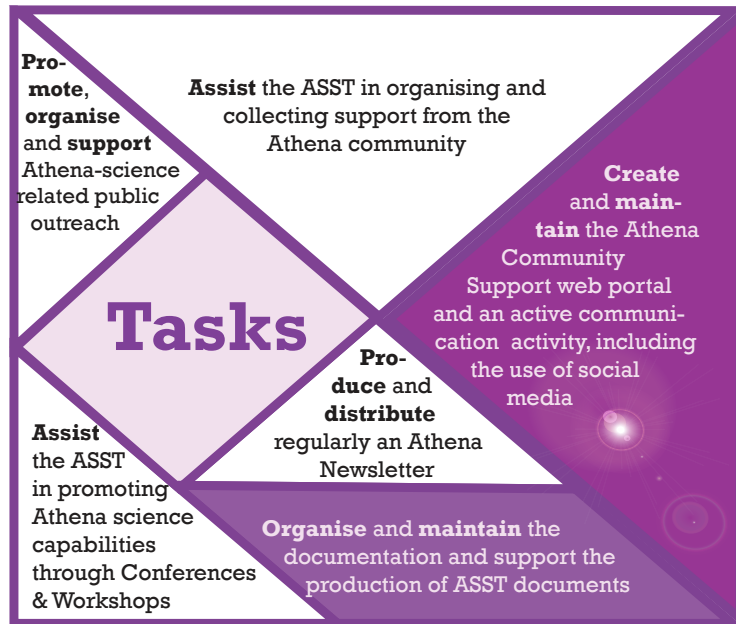
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Athena Community Office

ACO

ESA's Athena Science Study Team (ASST) established the Athena Community Office (ACO) in order to obtain support in performing its tasks assigned by ESA, specially as "focal point for the interests of the broad scientific community"

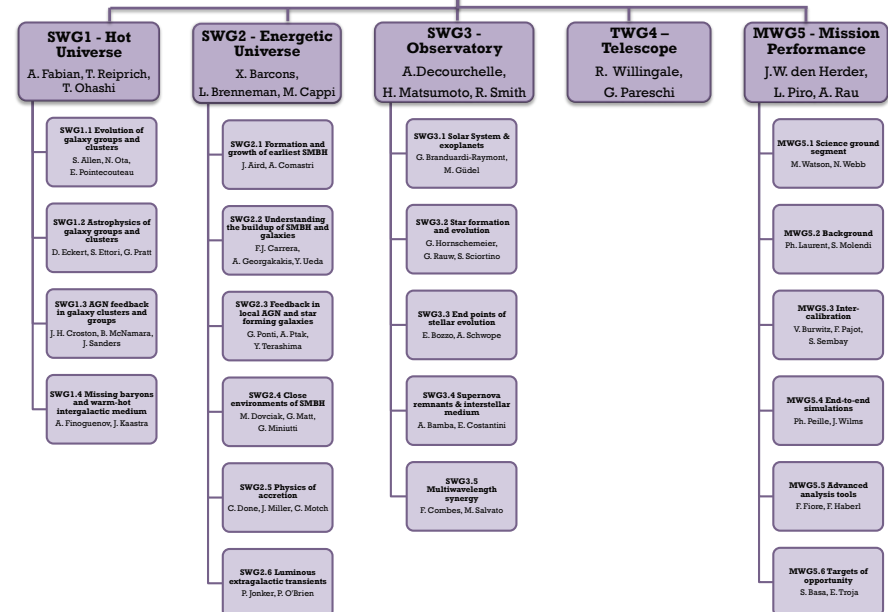


The Athena Community

The Athena Community is an immense resource containing most of the critical scientific and technical knowledge needed to bring Athena to success. Currently, more than 800 scientists support Athena, in a defined structure (see below) of 5 Working Groups, dealing with general aspects of the project such as: The Hot Universe, The Energetic Universe, Observatory Science, Telescope and Mission Performance. Most of them are organised in Topical Panels (e.g. SWG1.3, MPG5.2, etc)

ESA Athena Science Study Team (ASST)

D. Lumb (Chair), K. Nandra (Lead & WFI), X. Barcons, D. Barret (X-IFU), A. Decourchelle, J. W. den Herder, A. Fabian, H. Matsumoto (JAXA), L. Piro, R. Smith (NASA), R. Willingale



Xavier Barcons (IFCA)



Didier Barret (IRAP)



Enrico Bozzo (UniGe)



Francisco Carrera (IFCA)



Maria Teresa Ceballos (IFCA)



Sara Gómez (IFCA)



Silvia Martínez (IFCA)



Pilar Monterde (IFCA)



Arno Rau (MPE)



Athena Community Office
Instituto de Física de Cantabria (CSIC-UC)
<http://www.the-athena-x-ray-observatory.eu/>

✉ aco@ifca.unican.es
📧 [@athena2028](https://twitter.com/athena2028)
📍 The Athena X-ray Observatory
🌐 Athena X-ray Observatory