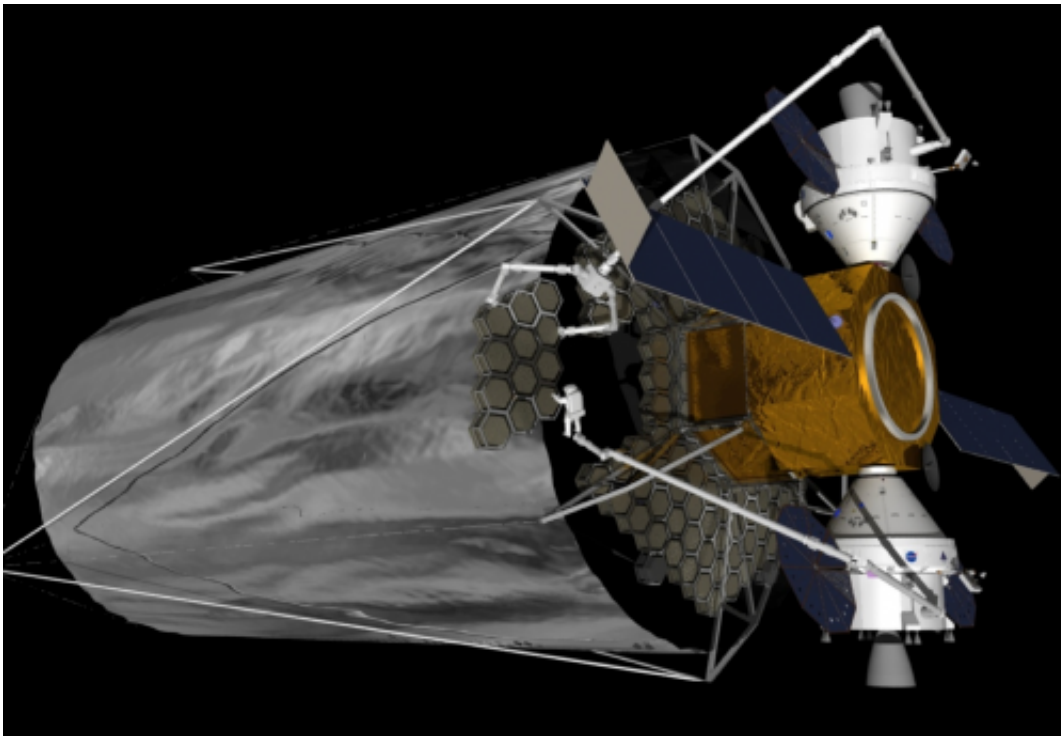


Time to think big: A call for a giant space telescope

June 23 2014, by Anita Heward



An artist's concept of the ATLAST telescope under construction in space. This design has a segmented mirror 20 metres across. Credit: NASA/STScI.

(Phys.org) —In the nearly 25 years since the launch of the Hubble Space Telescope (HST), astronomers and the public alike have enjoyed groundbreaking views of the cosmos and the suite of scientific discoveries that followed. The successor to HST, the James Webb Space Telescope should launch in 2018 but will have a comparatively short lifetime.

Now Prof Martin Barstow of the University of Leicester is looking to the future. In his talk at the National Astronomy Meeting (NAM 2014) in Portsmouth on Tuesday 24 June, he calls for governments and space agencies around the world to back the [Advanced Technologies Large Aperture Space Telescope](#) (ATLAST), an instrument that would give scientists a good chance of detecting hints of life on planets around other stars.

ATLAST is currently a concept under development in the USA and Europe. Scientists and engineers envisage a telescope with a mirror as large as 20 m across that like HST would detect visible light and also operate from the far-ultraviolet to the infrared parts of the spectrum. It would be capable of analysing the light from planets the size of the Earth in orbit around other nearby stars, searching for features in their spectra such as molecular oxygen, ozone, water and methane that could suggest the presence of life. It might also be able to see how the surfaces of planets change with the seasons.

Within the vision "Cosmic birth to living Earths", ATLAST would study star and galaxy formation in high definition, constructing the history of star birth in detail and establishing how intergalactic matter was and is assembled into galaxies over billions of years.

If it goes ahead, ATLAST could be launched around 2030. Before this can happen, there are technical challenges to overcome such as enhancing the sensitivities of detectors and increasing the efficiencies of the coatings on the mirror segments. Such a large structure may also need to be assembled in space before deployment rather than launching on a single rocket. All of this means that a decision to construct the telescope needs to happen soon for it to go ahead.

Prof Barstow is the President of the Royal Astronomical Society, but is speaking in a personal capacity. He sees ATLAST as an ambitious but

extraordinary project. He commented:

"Since antiquity human beings have wondered whether we really are alone in the universe or whether there are other oases of life. This question is one of the fundamental goals of modern science and ATLAST could finally allow us to answer it.

"The time is right for scientific and space agencies around the world, including those in the UK, to take a bold step forward and to commit to this project."

More information: www.nam2014.org/

Provided by Royal Astronomical Society

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