Royal Astronomical Society

Professor Andrew Bunker – Herschel Medal (A)

Professor Andrew Bunker is a leading authority on the high redshift Universe, and has made major contributions to our understanding of early galaxy evolution through using the Hubble Space Telescope (HST), large ground-based telescopes, and most recently the James Webb Space Telescope (JWST). His work has repeatedly pushed the envelope in finding the most distant galaxies, addressing the evolution of the star formation in the Universe.

His team was the first to use the Lyman-break technique with HST in 2003 to find redshift 6 galaxies, a crucial epoch when the Universe transitioned from mostly neutral gas to ionised plasma. Professor Bunker led the first spectroscopic confirmation of these galaxies, detecting Lyman-alpha emission with the Keck Telescope. He led the first scientific paper analysing the Hubble Ultra Deep Field in 2004, discovering a population of star-forming galaxies within the epoch of reionization which have recently been confirmed with JWST spectroscopy.

Throughout his career, Professor Bunker has pioneered the development and application of new instrumentation in astrophysics. Since 2005, Professor Bunker has been a core member of the ESA Instrument Science Team for the Near-InfraRed Spectrograph (NIRSpec) instrument, now in operation on the JWST.

Since the launch of the JWST in 2021, the multi-object capability of NIRSpec has enabled thousands of high redshift galaxy spectra to be obtained, and Professor Bunker has led the selection of NIRSpec targets for the JWST Advanced Deep Extragalactic Survey (JADES). JADES has repeatedly broken the record for the most distant spectroscopically confirmed galaxies. In 2023 Professor Bunker published the spectrum of a remarkable galaxy, GNz11 at redshift 10.6, discovering the earliest example of Lyman-alpha in emissio. and determining a super-solar nitrogen-to-oxygen ratio. This completely unexpected result has subsequently been seen in several other high redshift galaxies and places strong constraints on their chemical enrichment and star formation histories.

For his pioneering work in identifying galaxies at very high redshifts, and using spectroscopy from the James Webb Space Telescope to explore galaxy formation in the early Universe, Professor Andrew Bunker is awarded the Herschel Medal of the Royal Astronomical Society in 2026.

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