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EChO: What are exoplanets made of?

G. Tinetti (1), P. Drossart (2), K. Isaak (3), O. Krause (4), C. Lovis (5), G. Micela (6), M. Ollivier (7), I. Ribas (8), I. Snellen (9), B. Swinyard (10)
(1) University College London, UK; (2) LESIA, Observatoire de Paris Meudon, France; (3) ESA-ESTEC, NL; (4) MPIA-Heidelberg, Germany; (5) Geneva Observatory, CH; (6) INAF - Palermo, Italy; (7) IAS, France; (8) ICE, Barcelona, Spain; (9) University of Leiden, NL; (10) Rutherford Appleton Laboratory, UK

Abstract

The Exoplanet Characterisation Observatory, EChO, will be the first dedicated mission to investigate the physics and chemistry of exoplanetary atmospheres.

EChO will expand the playground of planetary science beyond our solar system, by providing a representative sample of exoplanet spectra under a wide range of physical and chemical conditions. The observed chemical composition largely depends on the planet's thermal structure, which in turn depends on the planet's orbital distance and metallicity, and the host star's luminosity and stellar type. The planetary mass determines the planet's ability to retain an atmosphere. The range of planets and stellar environments explored by EChO extends from the very hot to the temperate zone and includes gas-giants, Neptunes and super-Earths.

EChO has been selected in 2011 as one of the four ESA M3 mission candidates, and it is currently in assessment phase. Here we will focus on the science of EChO and present the results obtained by the EChO Science Study Team.

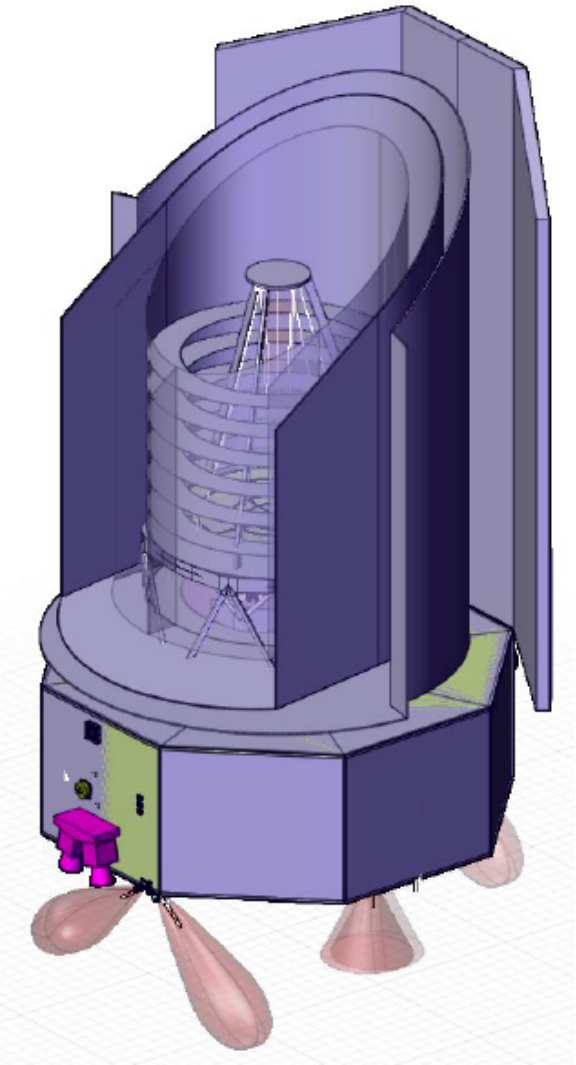

Figure 1: The EChO spacecraft.

References

[1] http://sci.esa.int/echo