



Ariel: Enabling planetary science across light-years

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Ariel, the Atmospheric Remote-sensing Infrared Exoplanet Large-survey, was adopted as the fourth medium-class mission in ESA's Cosmic Vision programme to be launched in 2029. During its 4-year mission, Ariel will study what exoplanets are made of, how they formed and how they evolve, by surveying a diverse sample of about 1000 extrasolar planets, simultaneously in visible and infrared wavelengths. It is the first mission dedicated to measuring the chemical composition and thermal structures of hundreds of transiting exoplanets, enabling planetary science far beyond the boundaries of the Solar System. The payload consists of an off-axis Cassegrain telescope (primary mirror 1100 mm x 730 mm ellipse) and two separate instruments (FGS and AIRS) covering simultaneously 0.5-7.8 micron spectral range. The satellite is best placed into an L2 orbit to maximise the thermal stability and the field of regard. The payload module is passively cooled via a series of V-Groove radiators; the detectors for the AIRS are the only items that require active cooling via an active Ne JT cooler. The Ariel payload is developed by a consortium of more than 50 institutes from 16 ESA countries, which include the UK, France, Italy, Belgium, Poland, Spain, Austria, Denmark, Ireland, Portugal, Czech Republic, Hungary, the Netherlands, Sweden, Norway, Estonia, and a NASA contribution.

This presentation provides an overall summary of the science and instrument design for Ariel and presents the many activities that the Ariel team have planned to engage the science community at large and the public prior to launch. These include the Ariel Dry-Run program and citizen-science programs such as ExoClock and the Ariel Data Challenges.

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