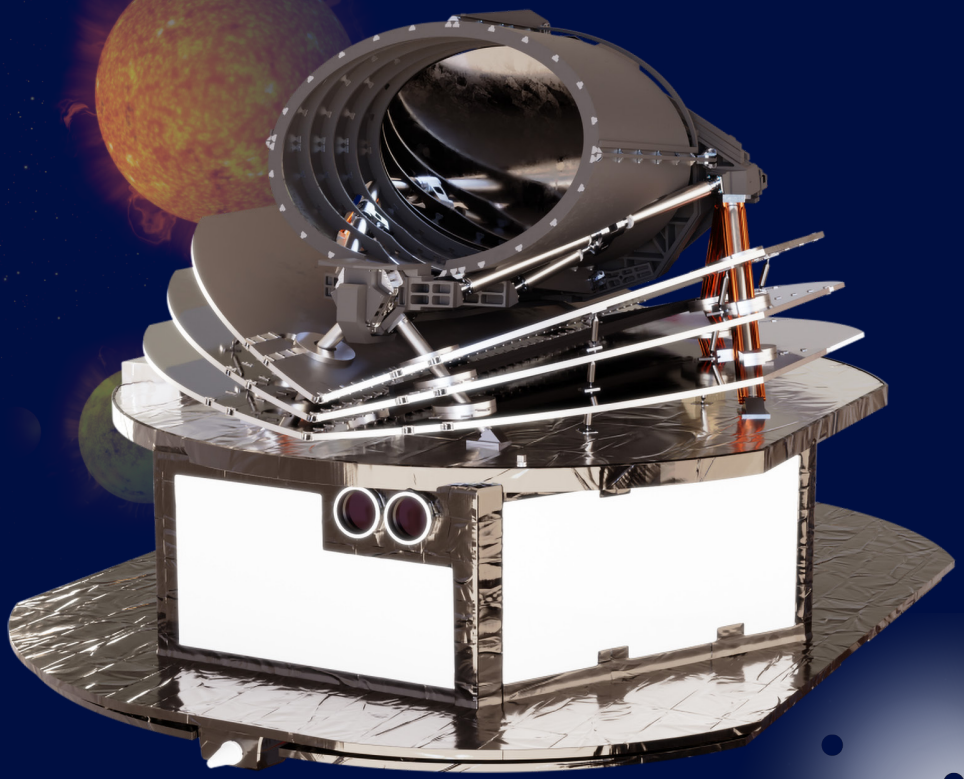
IPP INSTITUTE OF PLASMA PHYSICS
OF THE CZECH ACADEMY OF SCIENCES

toptec



Source: ESA

# OPTICS SETUP FOR THE ARIEL MISSION

The ESA ARIEL exoplanet mission (the Atmospheric Remote-sensing Infrared Exoplanet Large-survey mission) is scheduled for launch in 2029. The mission will measure the chemical composition and thermal structures of exoplanets, linking them to the environment of the host star. As such, it will help us answer key questions, such as, what are the conditions for planet formation and the emergence of life? ARIEL will study what exoplanets are made of, how they were formed and how they evolve by surveying a diverse sample of approximately 1000 planetary atmospheres simultaneously in visible and infrared wavelengths. The acquired data will fill a significant gap in our knowledge of how the chemistry of a planet is linked to the environment where it was formed or whether the type of host star drives the physics and chemistry of the evolution of a planet.

The mission's payload module, which includes a one-metre class cryogenic telescope and associated scientific instruments, is provided by the ARIEL Mission Consortium. The consortium comprises more than 50 institutes from 17 European countries. NASA also contributes to the payload.

TOPTEC involvement in the project includes the design, development and realization of common optics setup, including its holders and adjustment capabilities (in the range of units of μm). While the TOPTEC team is highly experienced in customized optical setup development, the ARIEL mission is specific by its working temperature of 50K, which makes the effort rather challenging.