W227a Updated Design and Development of the SPICA Telescope Assembly

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The SPICA is designed to have a telescope of a 3.2 meter primary mirror, which achieves diffraction-limitted performances at 5 μm below 6 K. The coronagraph further imposes requirements on the wavefront errors at mid-spatial frequencies. The SPICA telescope assembly has to be accommodated inside the volume of the static envelope given by the rocket faring, which constrains the basic optical design of the telescope. It is required that total background from out-of-field stray sources shall not increase the in-field optical background signal by more than 20% and the goal is less than 10%, which necessitates careful analyses of stray light control design. Two European industries have studied the updated design and made detailed analyses based on the contracts with ESA. Both of them have showed that it is feasible to achieve the requirements, although development activities are needed to finalize the detailed design. This presentation reviews scientific requirements and reports updated designs of the SPICA telescope assembly.