



Sentinel-4 NIR-grating

Development of the flight models

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200 nm

Cover: Sentinel-4 NIR-grating

Top: Scanning-Electron-Microscope image of a cut through the Sentinel-4 NIR grating structure

Description

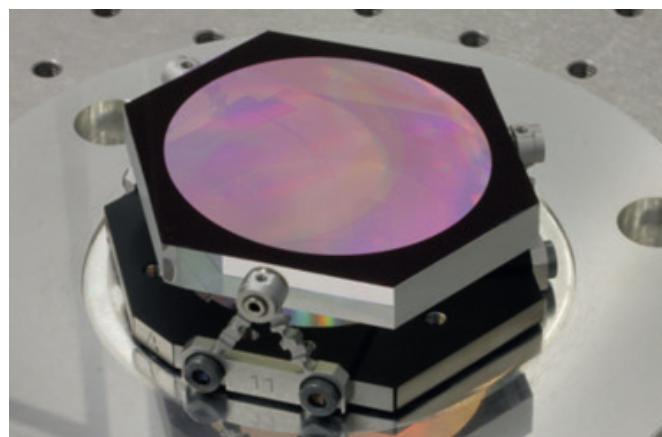
In ESA's scientific earth-observation mission Sentinel-4 the Fraunhofer IOF developed the flight hardware of the spectrometer gratings for the NIR-spectral channel including its isostatic mount.

Parameters

- the grating operates in the spectral band between 750nm and 775nm wavelength
- a fully dielectric reflection grating
- high angular dispersion in combination with a low polarization sensitivity
- grating with a period of 797nm, illuminated under 24.5° incidence angle
- average diffraction efficiency above 70%, polarization sensitivity below 3% over the full spectral range

Service / Technology

The grating is realized by electron-beam lithography in combination with a reactive ion-etching process in the uppermost SiO_2 -layer of a dielectric layer-stack composed of a specially designed high reflection $\text{Ta}_2\text{O}_5/\text{SiO}_2$ -layer system (see Fig. on top).



Qualification Model of the Sentinel-4 NIR grating unit

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