

BMK10k: a ground support telescope for the Plato2.0 Mission

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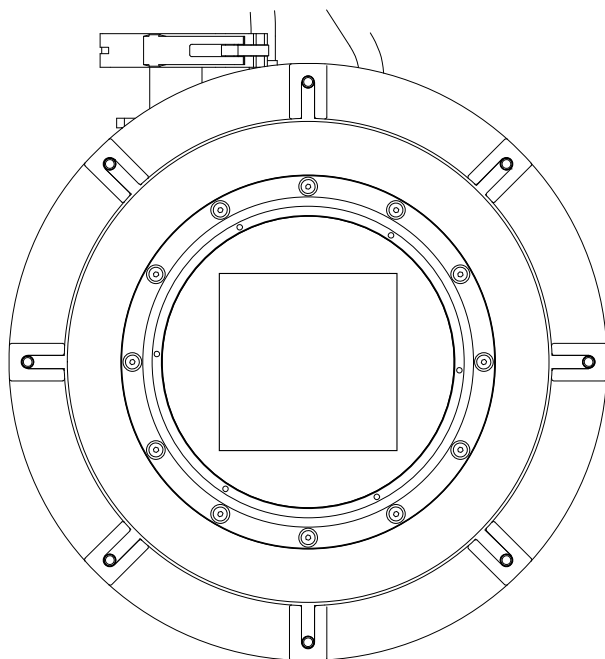
Overview

The BMK10k is a robotic telescope dedicated to observe the Southern Plato Field (SPF) from Chile starting in end of 2018. It is a combination of a 30cm lens telescope with a 100Megapixel CCD camera resulting in a field of view of $7.25^\circ \times 7.25^\circ$ and a plate scale of 2.54 arcsecs per pixel.

The Optics

Two large Ballistische Messkammern (BMK) were built in the 1970's by Carl Zeiss Jena with the purpose of imaging laser-illuminated satellites for their orbital determinations. Therefore, the optical system is laid out for high astrometric and photometric precision and is a so called Astro-Topar system with A-characteristics consisting of 10 individual lenses. Its free entrance aperture is 300mm (338mm lens diameter), f/2.5 and has a focal length of 751.1mm.

No design file is available nor are any of the glasses and radii known. The focal plane is planar over a linear range of 180mm by 180mm (nominally $13.6^\circ \times 13.6^\circ$) and has a measured back-focal-distance of 43.4 ± 0.1 mm. Due to the glass selection the usable wavelength range is restricted to redder than 450 nm which, therefore, does not permit the application of U or B filters.



STA1600LN in Dewar housing (actual size)

The Detector

The CCD system foreseen for the BMK is the PEPSI RED spare 10k×10k device. The detector is a monolithic STA1600LN device from STA. It is a thinned, backside illuminated 10560×10560-pixel solid-state CCD with a transparent poly-crystalline silicon gate structure for creating electron hole pairs. Its full frame is organized in two halves each containing an array of 10560 horizontal by 5280 vertical photosites. Horizontal transport registers along the top and bottom permit simultaneous readout of both halves. The pixel size is $9\mu \times 9\mu$.

Find out more!

