UWF 600

Optical Layout

The UWF600 uses a prime focus configuration. The main mirror is a high order asphere and in the prime focus we use a 5 Lens corrector to correct any field aberrations in a wavelength range from 400nm to 700nm.

With the medium focal length it offers a very wide field in combination with a high resolution, especially in combination with modern small pixel CMOS sensors. It can also be arranged in arrays on our DDM mounts and can be a cost effective solution compared to fewer, larger telescopes.

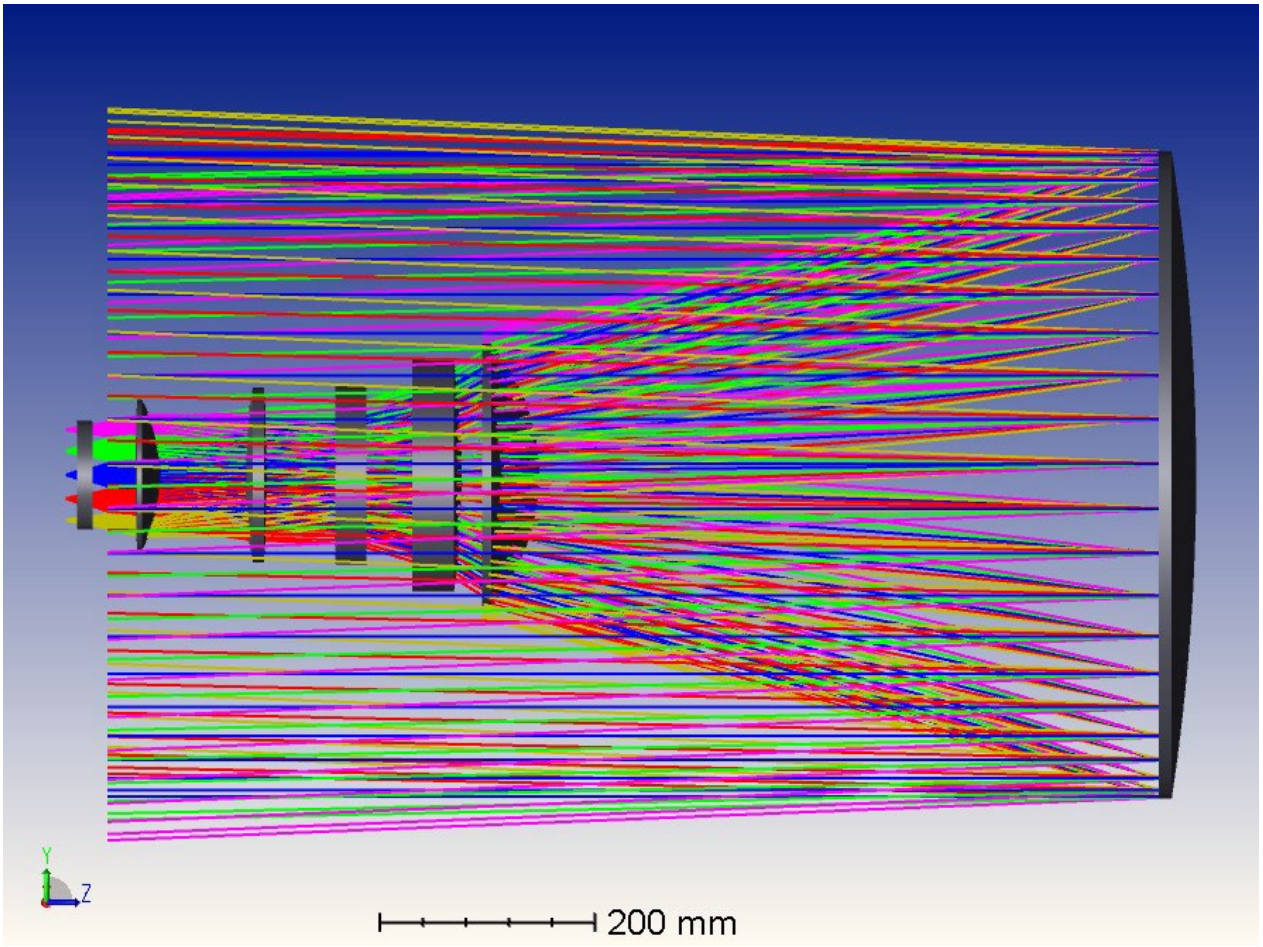


Figure 1 Optical Layout

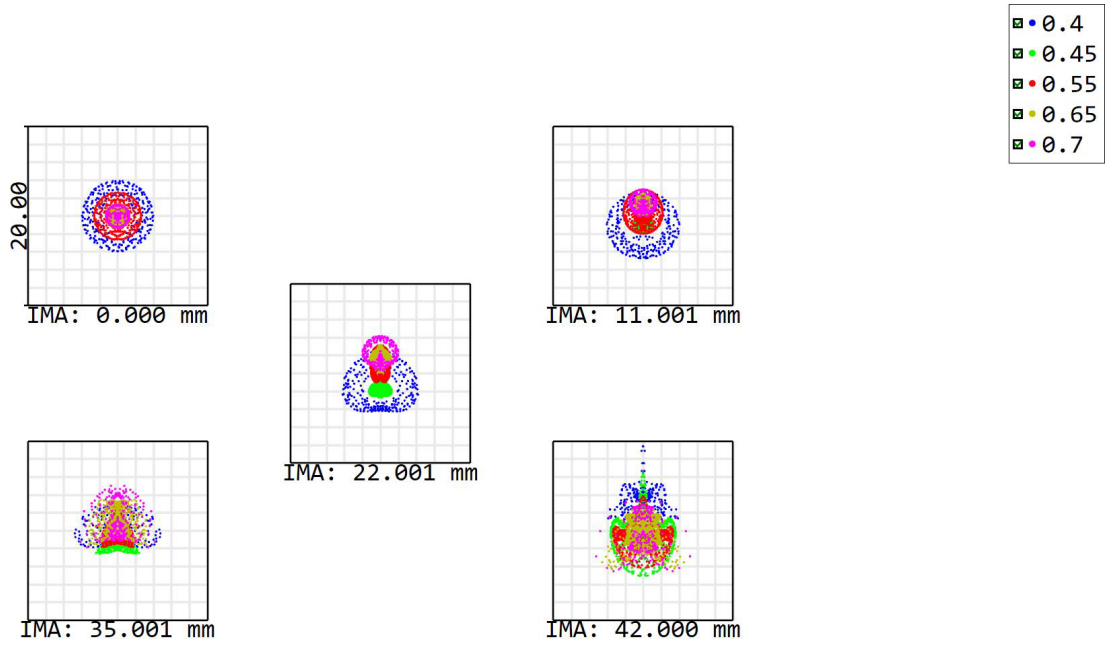
Optical Diameter:	600mm
Field of view:	84mm[*1)]
Focal length:	1018mm
Focal Ratio:	f/1.7

As with all these ultrafast systems, the system has to be optimized and assembled for a certain filter thickness. While other manufacturers will not care about filter thickness, we do know, that in a f/1.7 light beam even a flat medium with a refractive index <>1 causes spherical aberration which has to be included in the optical design for perfect image quality.

The corrector is of course coated with a multi layer AR coating.

*1) The field of view is given as diameter for which the performance was optimized. Since there exist no circular sensors, we often recommend to use a CCD with larger diagonal, since this allows a better usage of the optimized field.

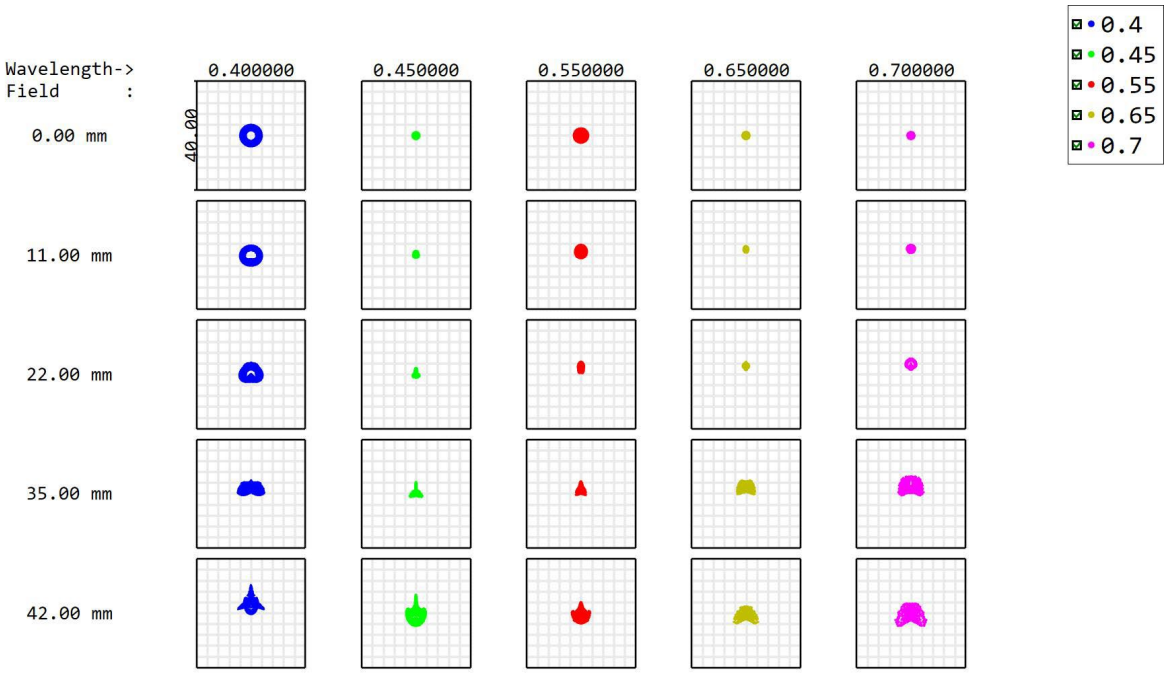
Optical performance



Surface: IMA

Spot Diagram	
600mm f/1.7, 11/22/2021 Units are µm. Legend items refer to Wavelengths Field : 1 2 3 4 5 RMS radius : 1.320 1.579 1.953 1.844 2.627 GEO radius : 3.961 4.712 5.019 5.061 9.415 Box width : 20 Reference : Centroid	ASA Astrosysteme Austria Zemax OpticStudio 15.5 SP1

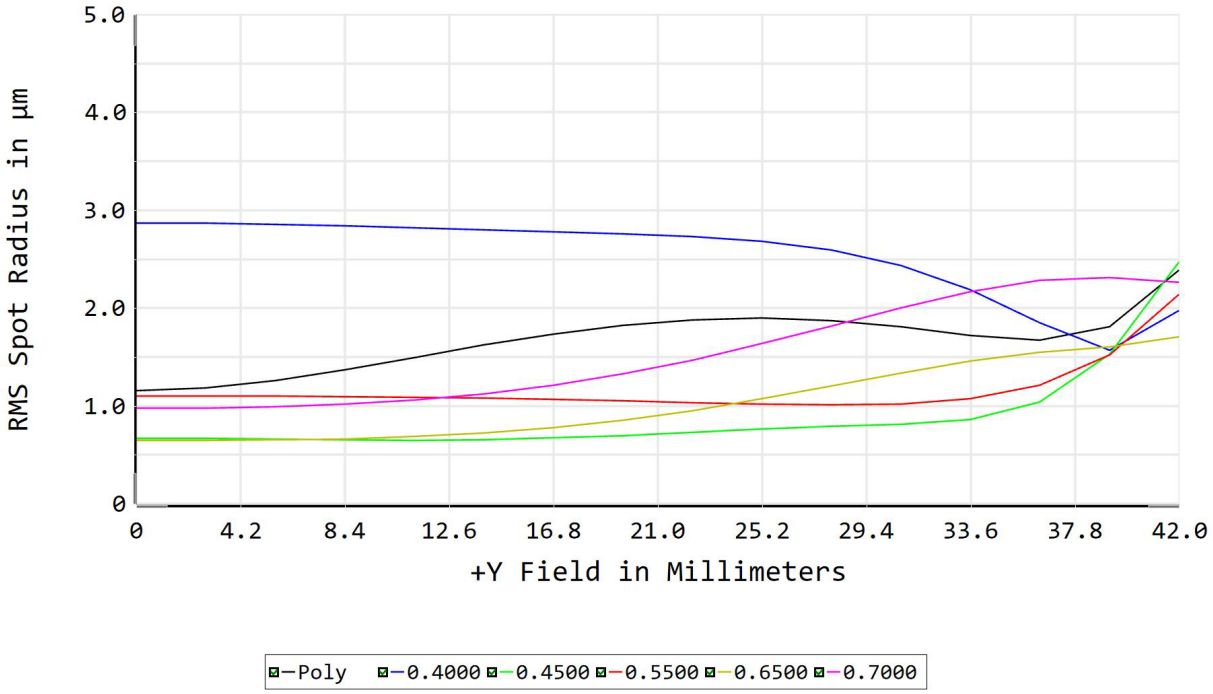
Figure 2 Spot Diagram (Box Size is 20 micron)



Surface: IMA

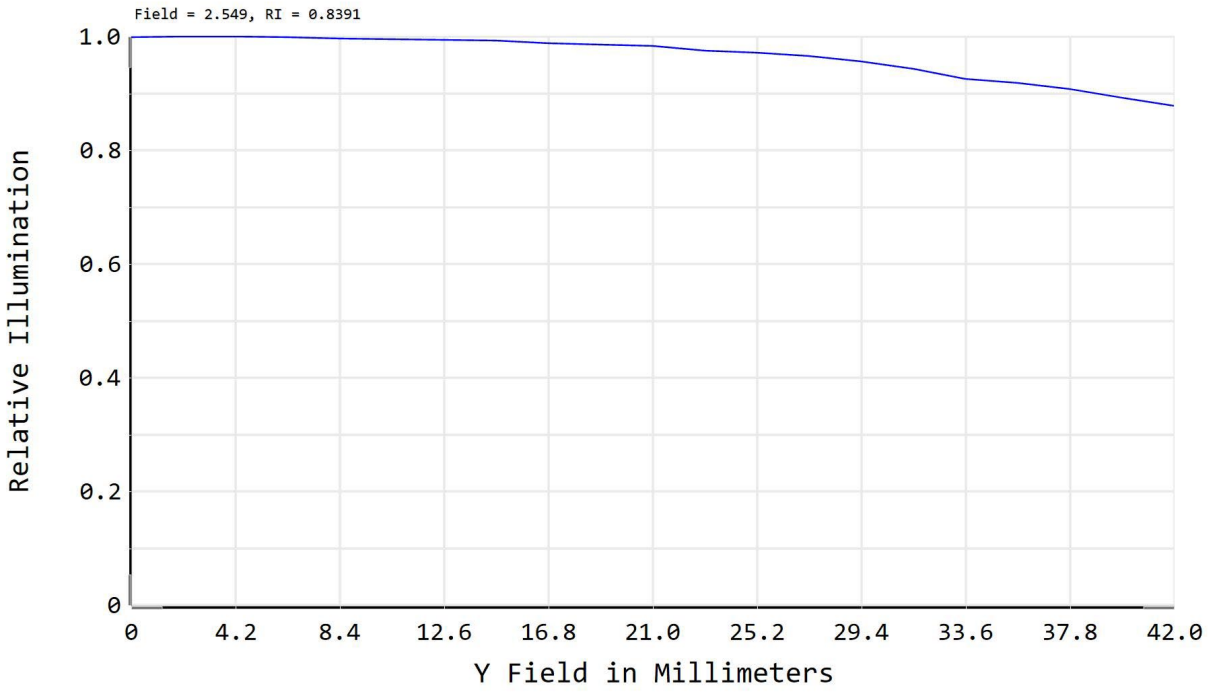
Matrix Spot Diagram	
600mm f/1.7 11/22/2021 Units are µm. Legend items refer to Wavelengths Box width : 40 Reference : Chief Ray	ASA Astrosysteme Austria Zemax OpticStudio 15.5 SP1

Figure 3 Matrix Spot Diagram (Box size 40 micron)



RMS Spot Radius vs Field	
600mm f/1.7 11/22/2021 Legend items refer to Wavelengths Reference: Centroid	ASA Astrosysteme Austria Zemax OpticStudio 15.5 SP1

Figure 4 RMS Spot diameter vs Field



Relative Illumination	
600mm f/1.7 11/22/2021 Wavelength: 0.550000 µm	ASA Astrosysteme Austria Zemax OpticStudio 15.5 SP1

Figure 5 Light loss from center to edge

Mechanics

The closed full tube is made of carbon fiber and includes a light shroud. The main mirror can be collimated fully electronic to allow an easy and fast remote collimation. As one of the first telescopes in the market, the prime focus image plane can also be tilted fully electronic with 3 ball spindles with absolute encoder. This allows a very easy adjustment (we know no CCD or CMOS which would have a internal alignment accurate enough to cover the full resolution of our prime focus instrument without tweaking the image plane tilt).

The electronics for the collimation and focusing is attached to the tube.

The total weight of the OTA is 150kg.

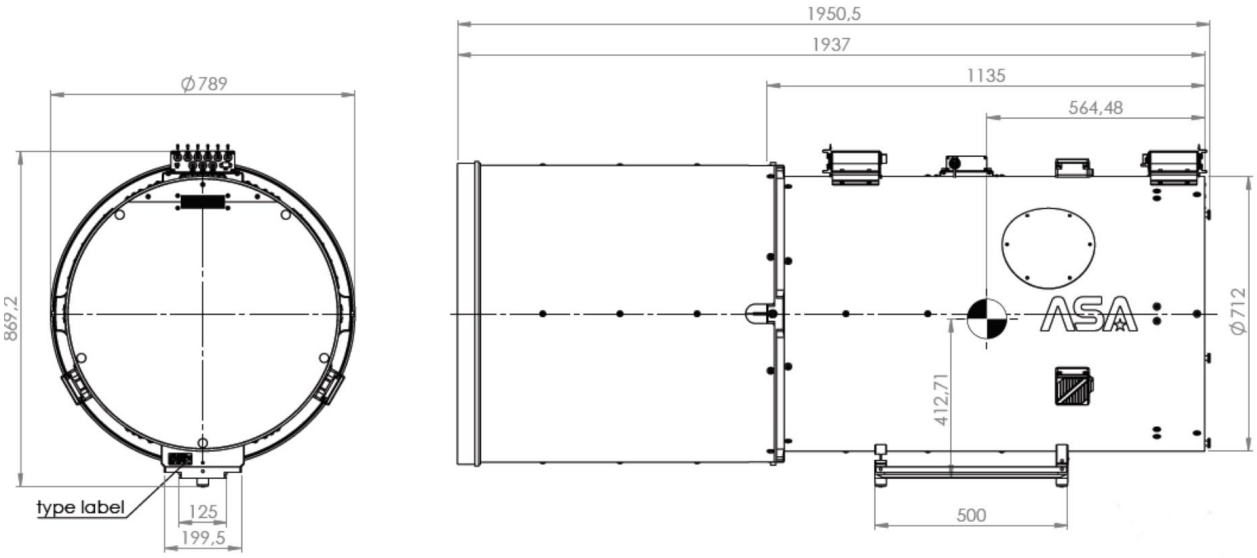
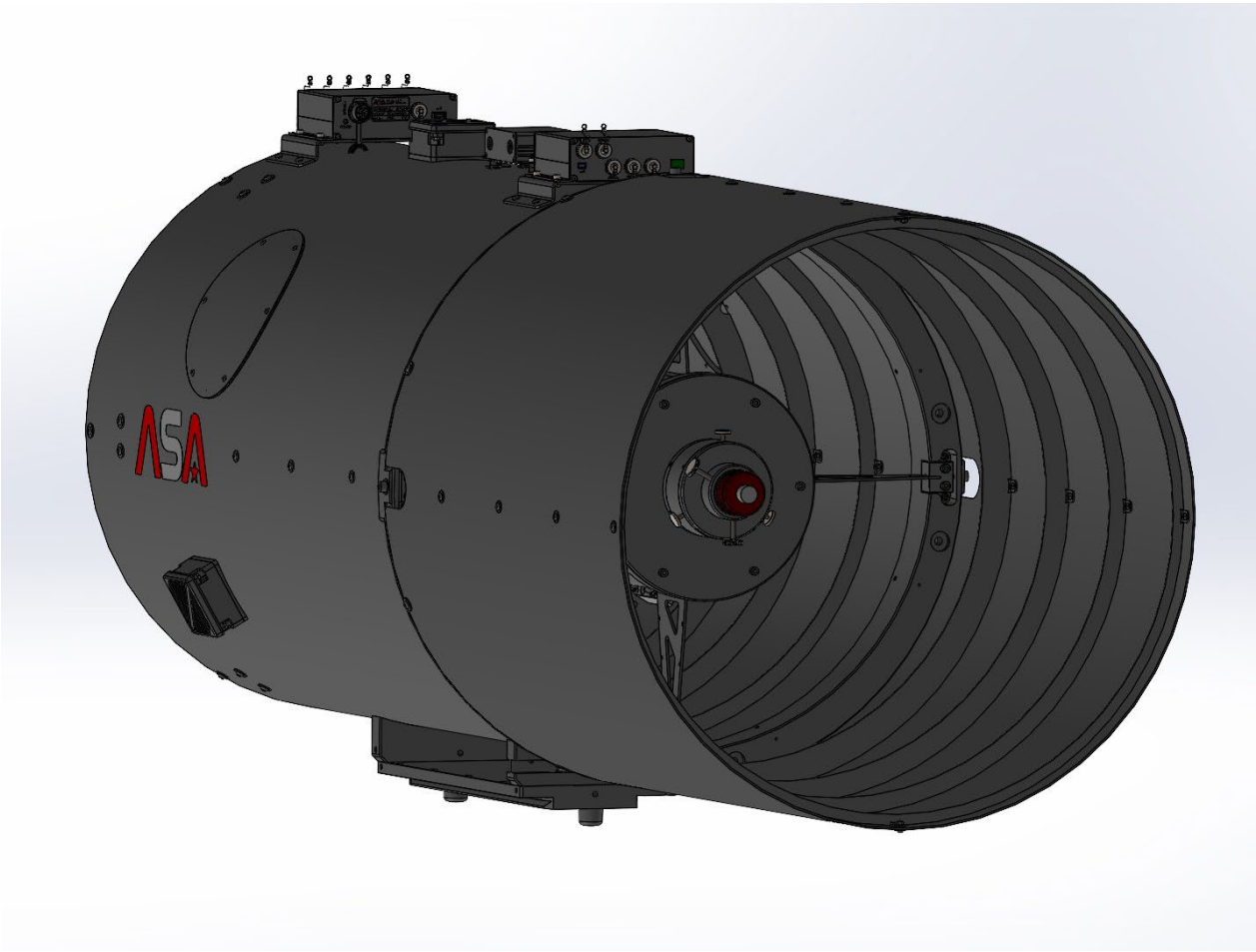
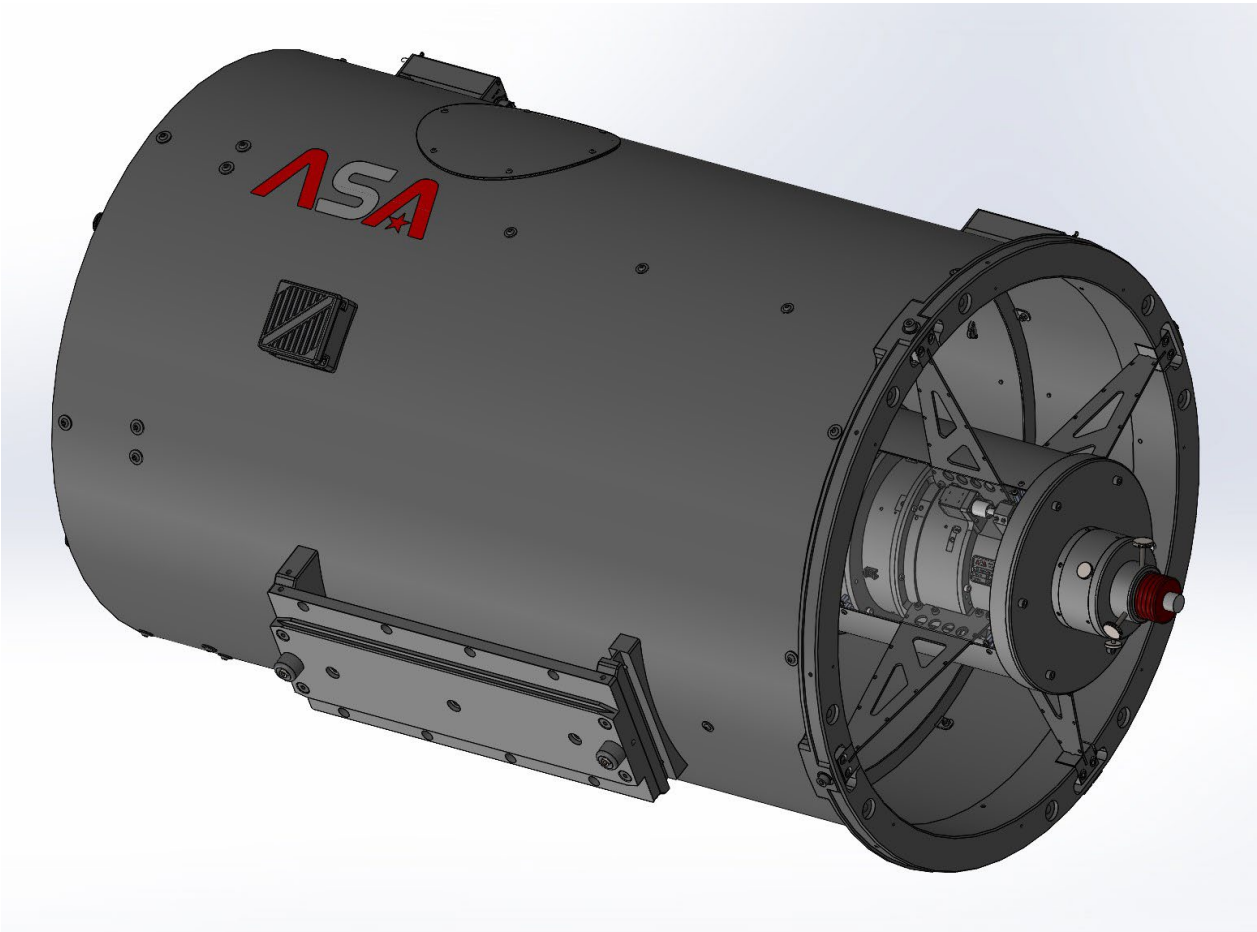


Figure 6 Tube dimensions




ASA