Simulation of the optical performance of the GCT and its prototype using ROBAST

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Last updates

Updated:

- Secondary mirror support masts
- Primary mirror support frame
- Camera support footings and trusses

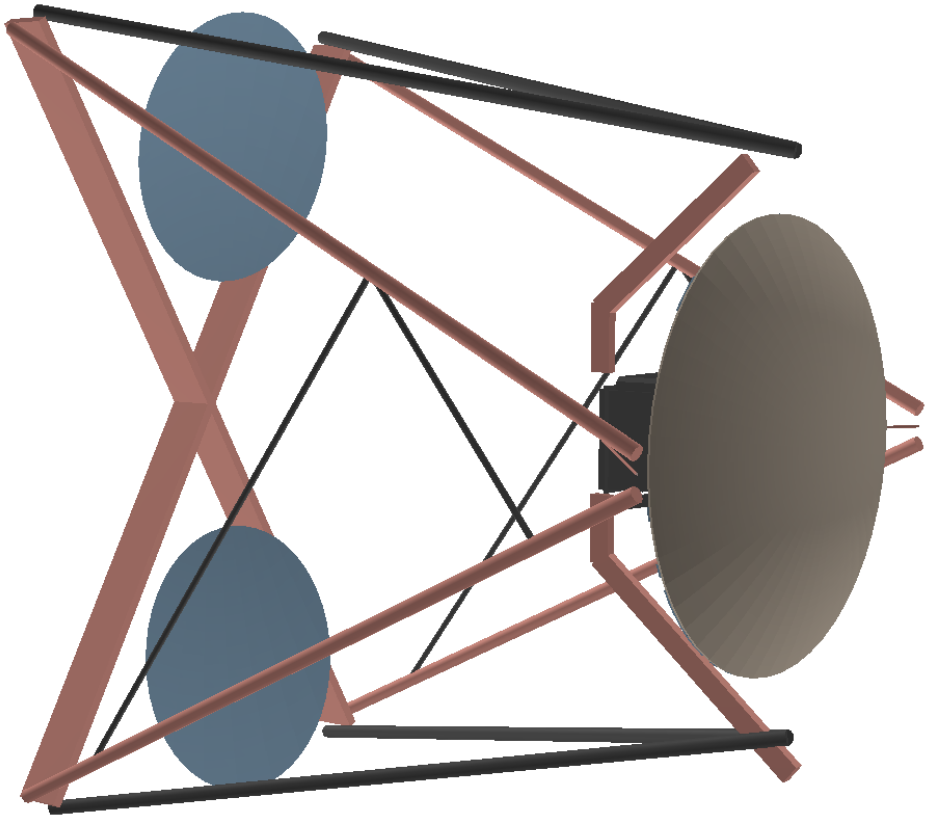
Added:

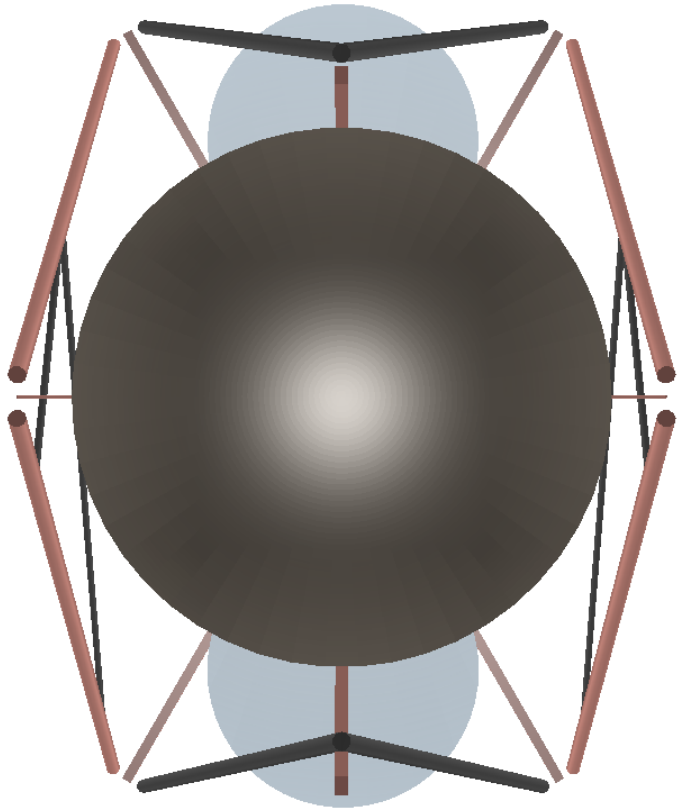
- Reinforcing bars

For the GCT:

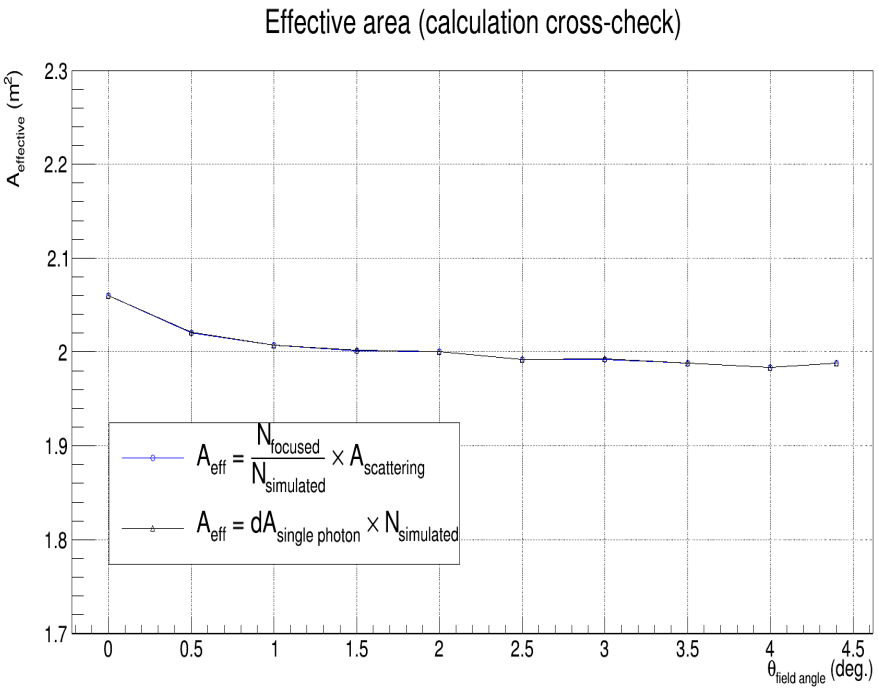
- Implemented mirrors with complex hexagonal contour shape

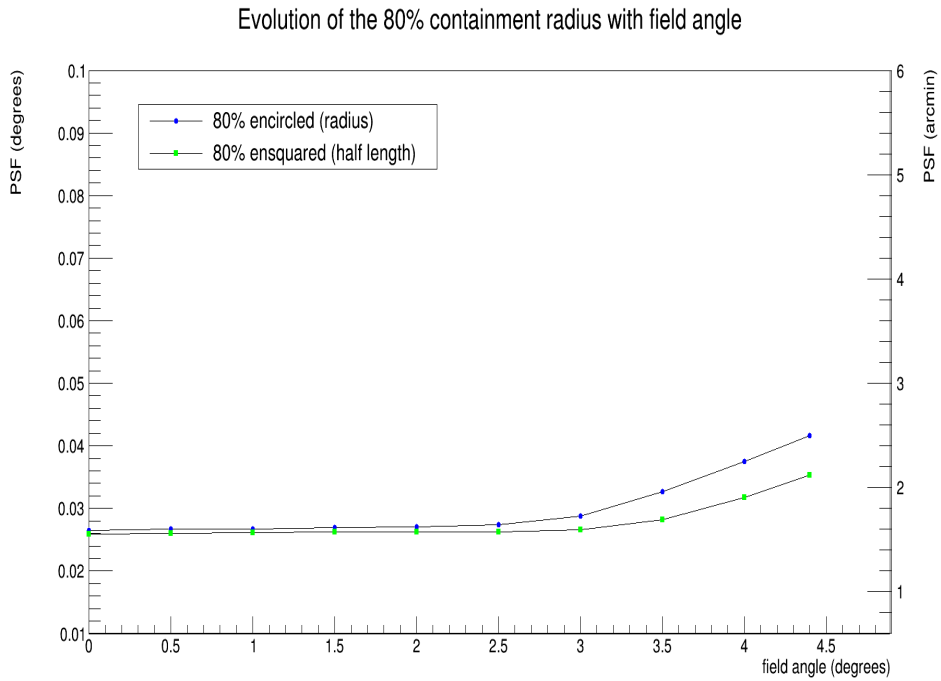
Computational model of the prototype design

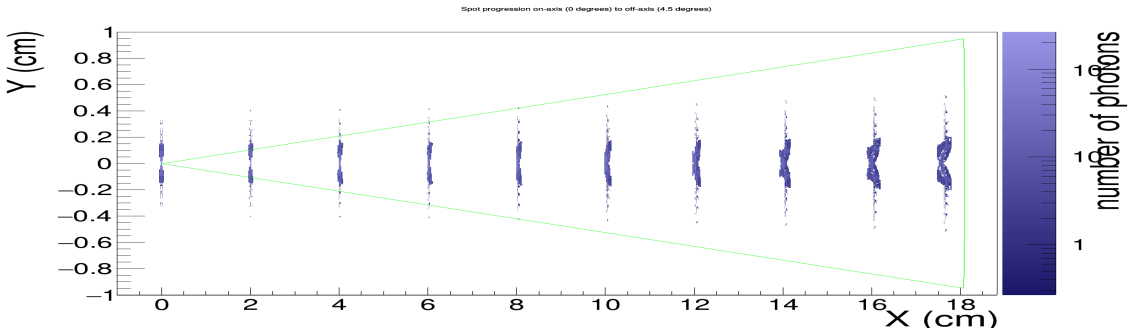




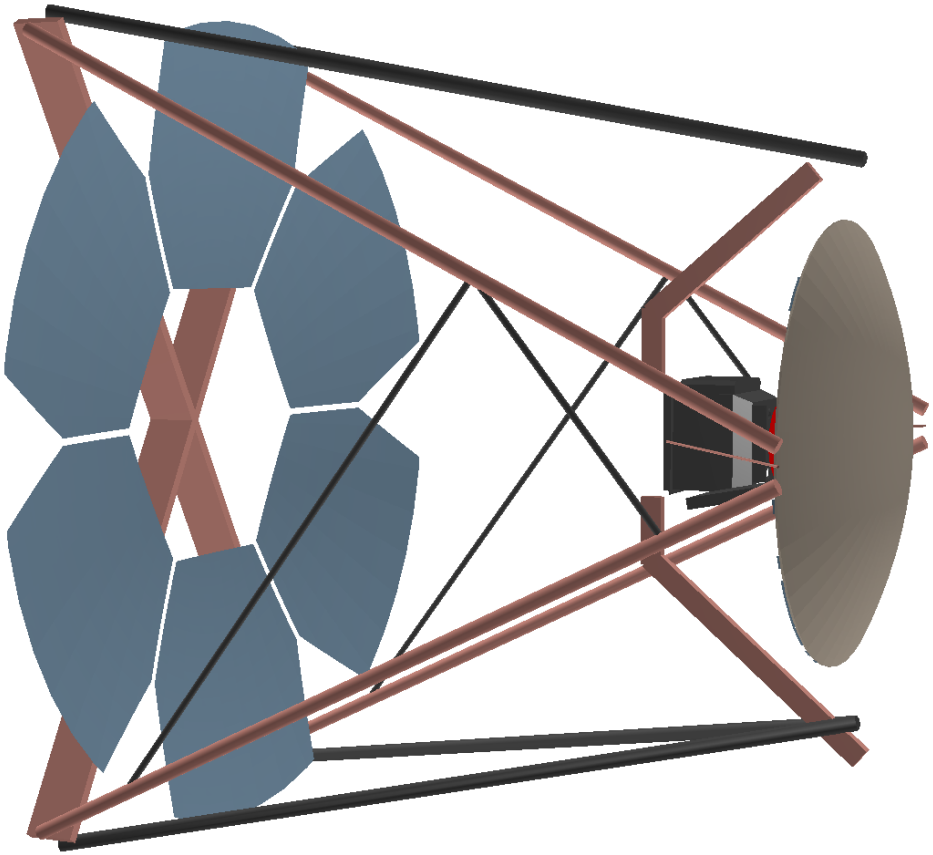
Ideal optical performance (effective area, PSF) of prototype

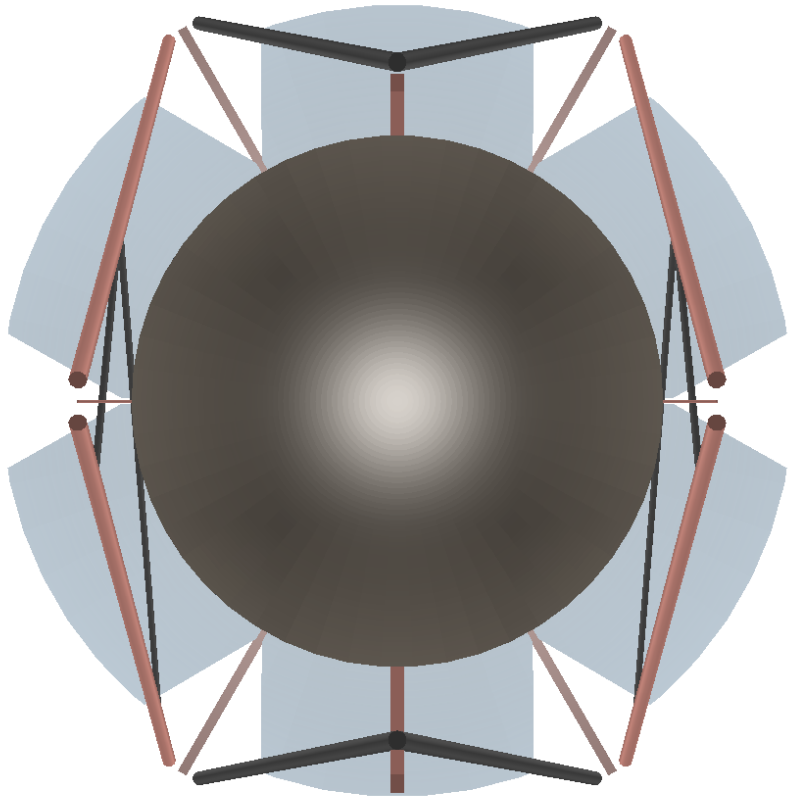




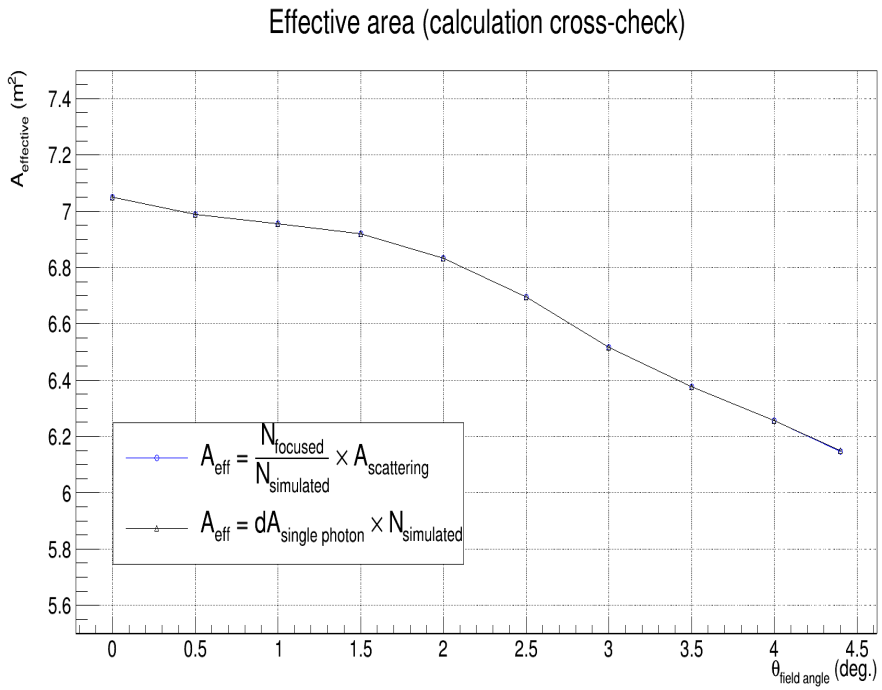


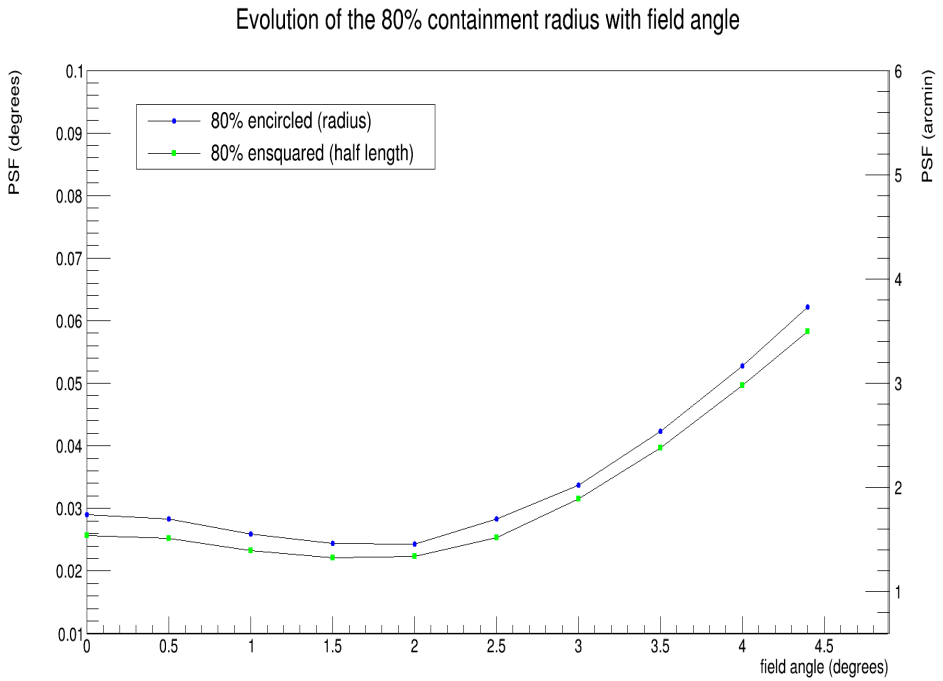
Computational model of the GCT design

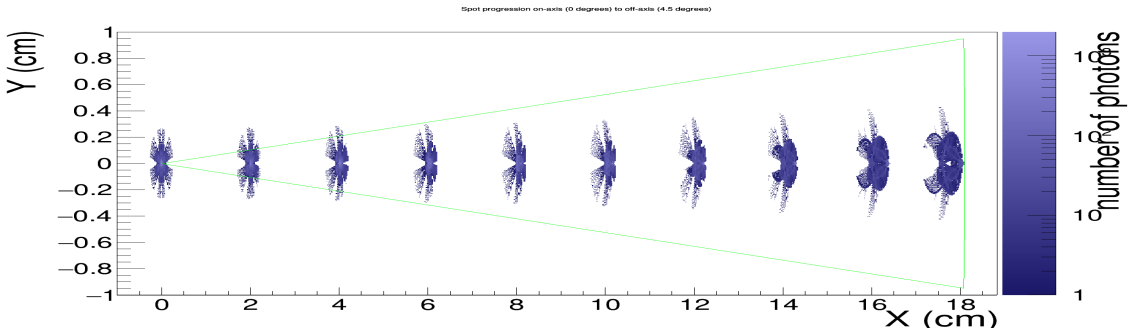




Ideal optical performance (effective area, PSF) of GCT

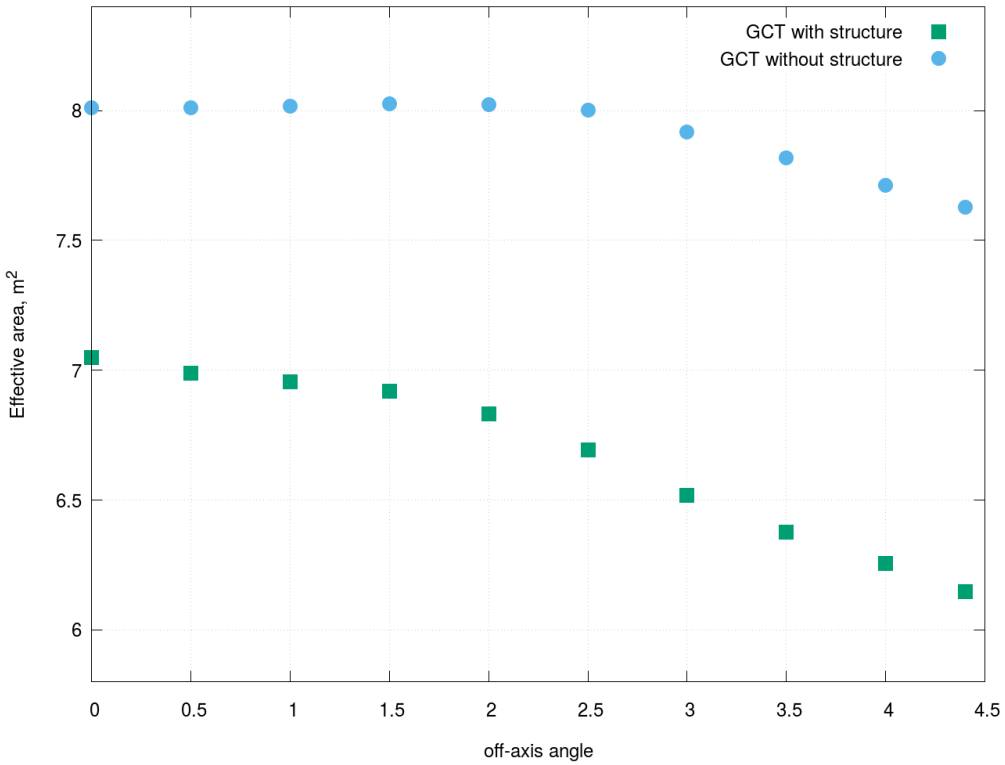




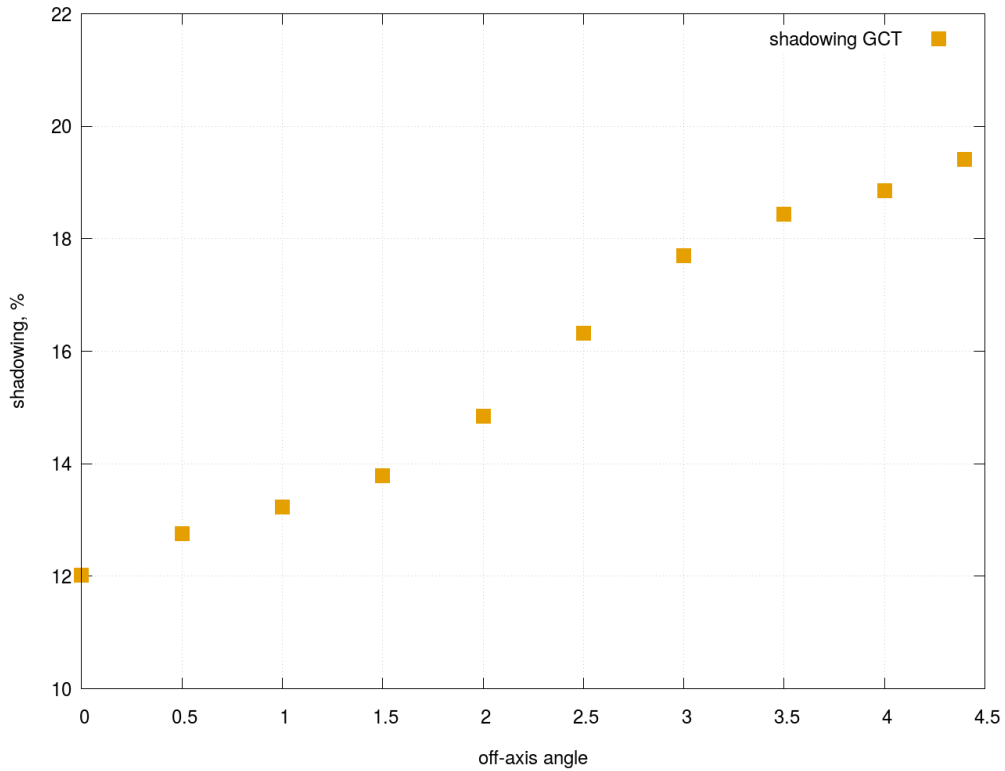


Shadowing (GCT)

We compare the effective area of GCT with shadowing components (masts, trusses, camera body) and without these components (retaining only primary and secondary mirror, secondary obscuration and ideal focal plane)



Shadowing (GCT)



– the shadowing is $\approx 12\%$ for on-axis observation, and increases to $\approx 19\%$ for observation at edge of FoV

– shadowing is just a bit larger than in Cameron's results for GCT (11 %)