

HIPPARCOS - PAYLOAD STUDY

L. Lindgren ESTEC 79-09-13

Note concerning relay optics and IDT

Considerations for relay optics design:

1. Magnification: Priority should be given to the part of the FOV within 30' from optical axis. Severely degraded performance (sensitivity, IFOV focus, ...?) can be accepted outside of this circle. The extreme FOV corners (say, radius > 35') can even be completely sacrificed, if necessary. If 30' radius is imaged on the IDT "quality area" (0.56 inch diameter), the demagnification will be 3.0.
2. Collection efficiency: $\beta \equiv L/L_0 \geq 1.5$ is highly desirable (collecting angle $\pm 5.5^\circ$ on diagonal).
oversizing
3. Blur circle: The scientists are very reluctant to increase the IFOV angular diameter from present value 30". Consequently, it is highly desirable to have a blur circle diameter $\leq 25"$ (corresponding to 100 μm with demagnification = 3.0).
4. Transmittance: Short-wavelength cut-off at 350-380 nm is acceptable, although a shorter ^{one} would be very much preferred. Is it feasible to change the long-wavelength cut-off from 600 nm to (say) 650-700 nm?