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CORPORATION

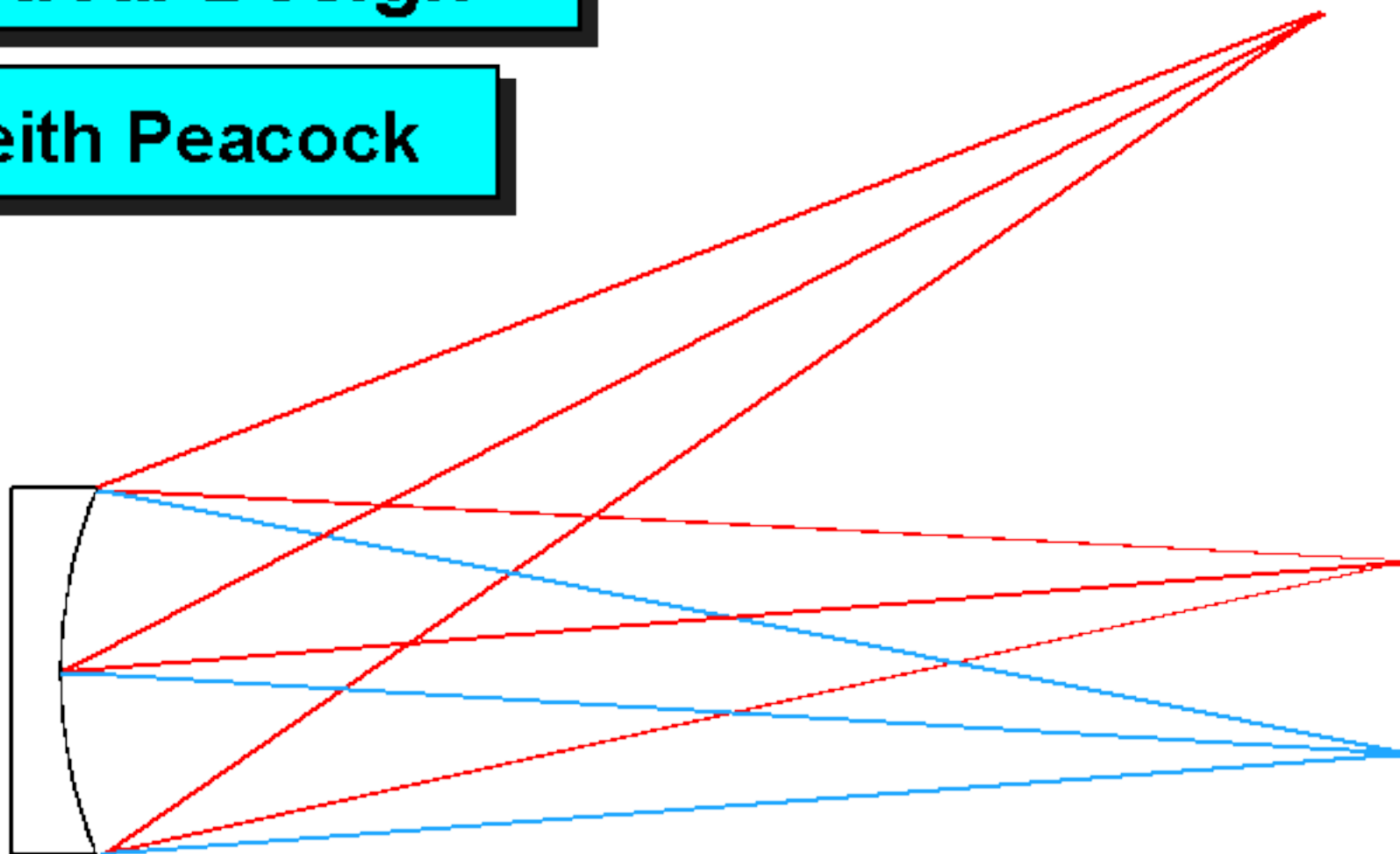
GUVI

Global Ultraviolet Imager
Critical Design Review



Optical Design

Keith Peacock





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Optical Design Characteristics

<i>Collecting Area:</i>	5 cm ²
<i>Aperture Size:</i>	2 x 2.5 cm.
<i>Focal Length:</i>	7.5 cm
<i>Design type:</i>	OAP imager Rowland Spectrograph
<i>Disperser:</i>	1200 gr/mm grating



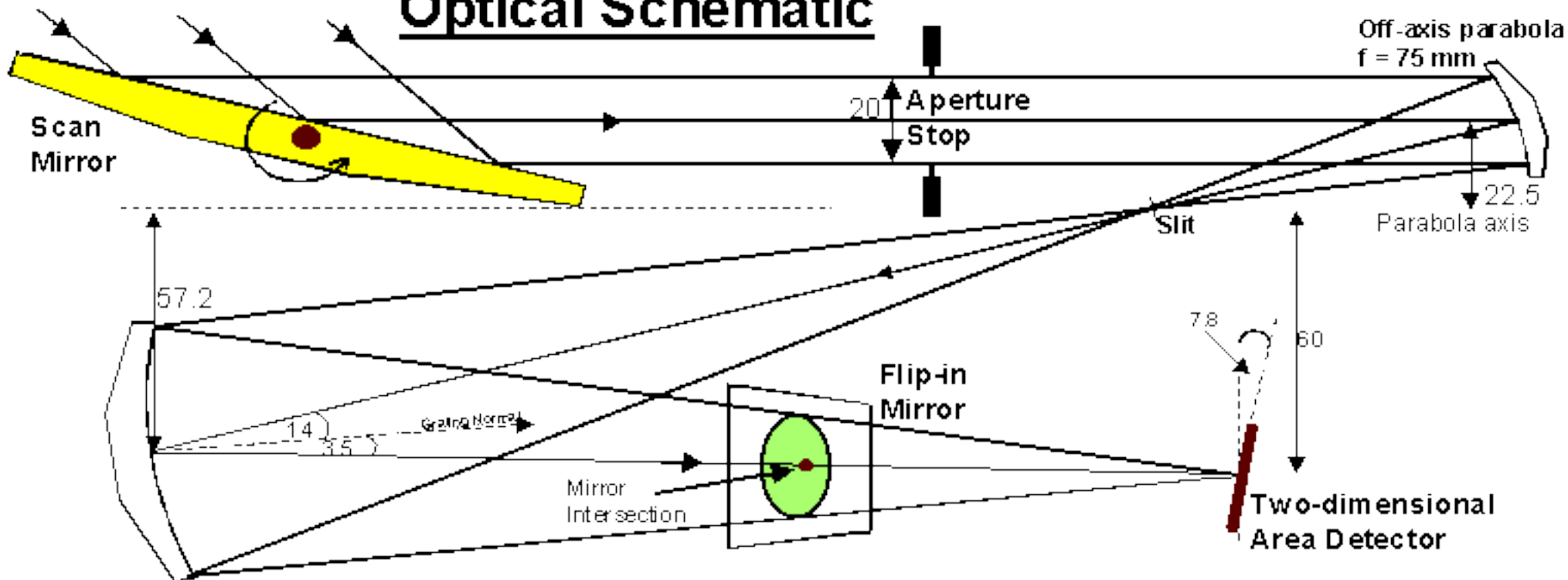
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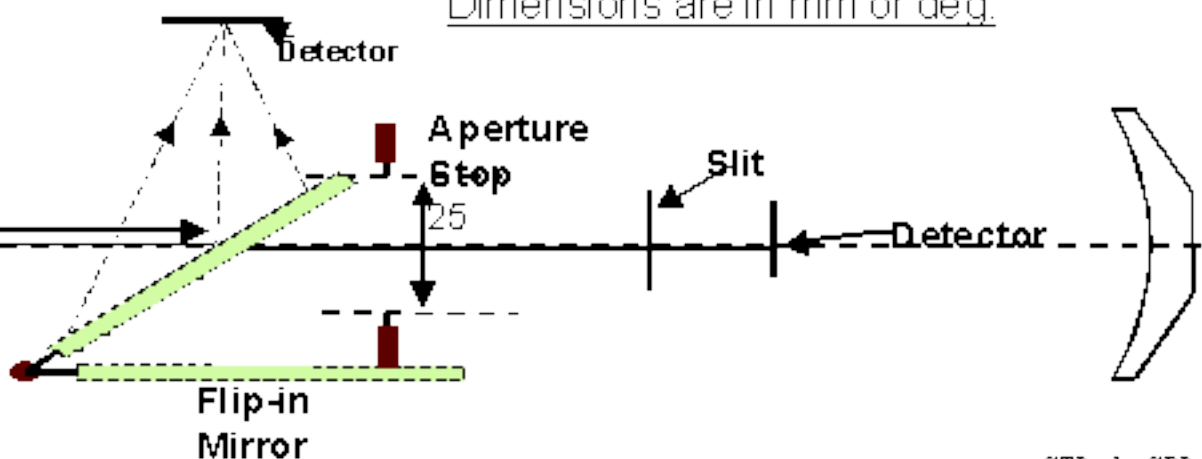
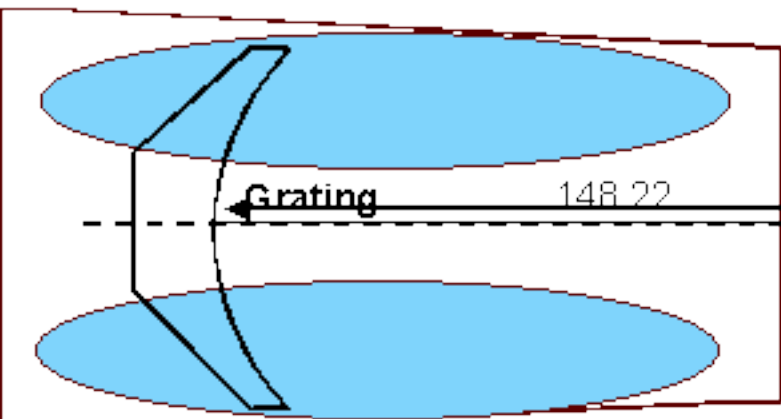
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Optical Schematic



Dimensions are in mm or deg.





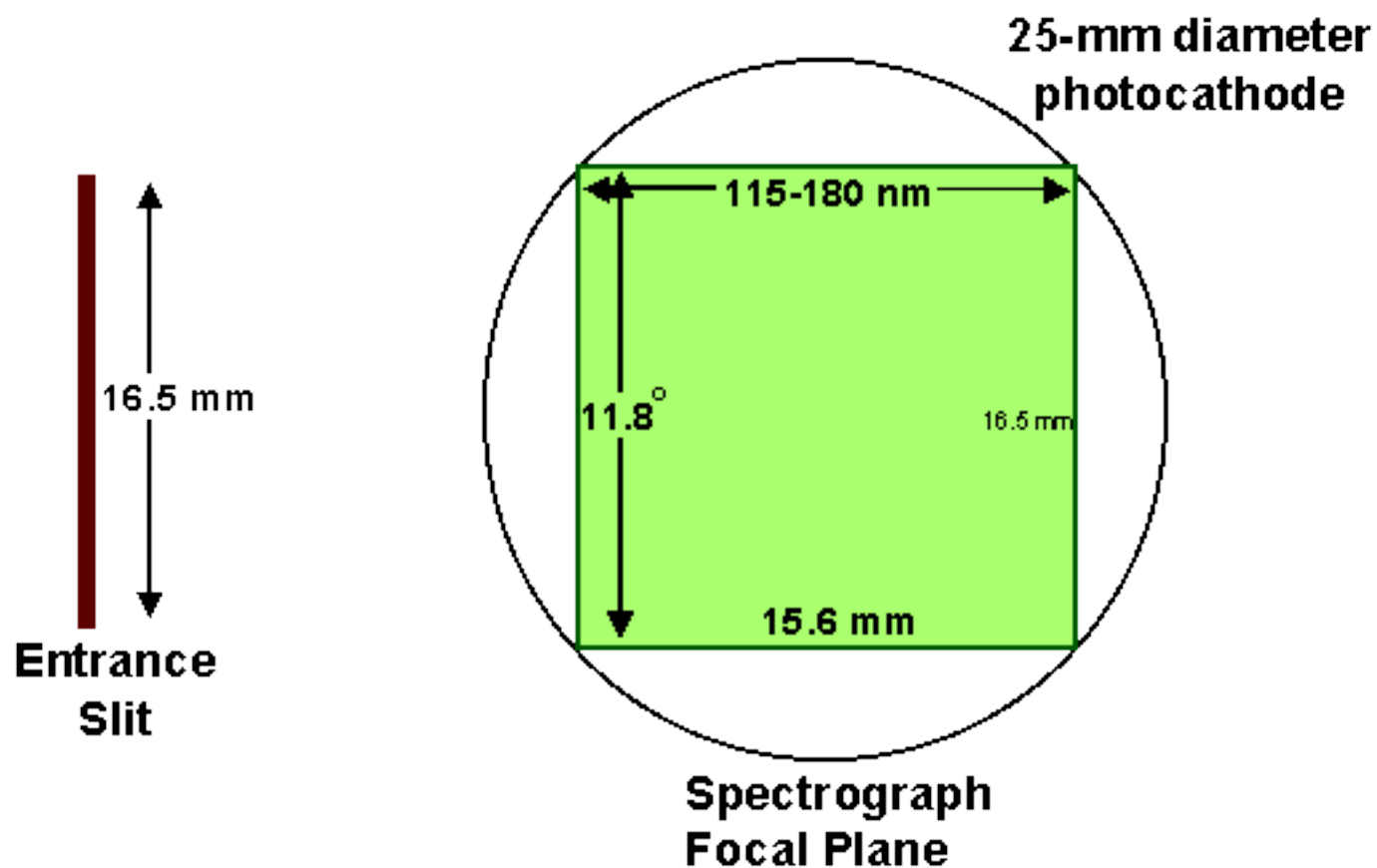
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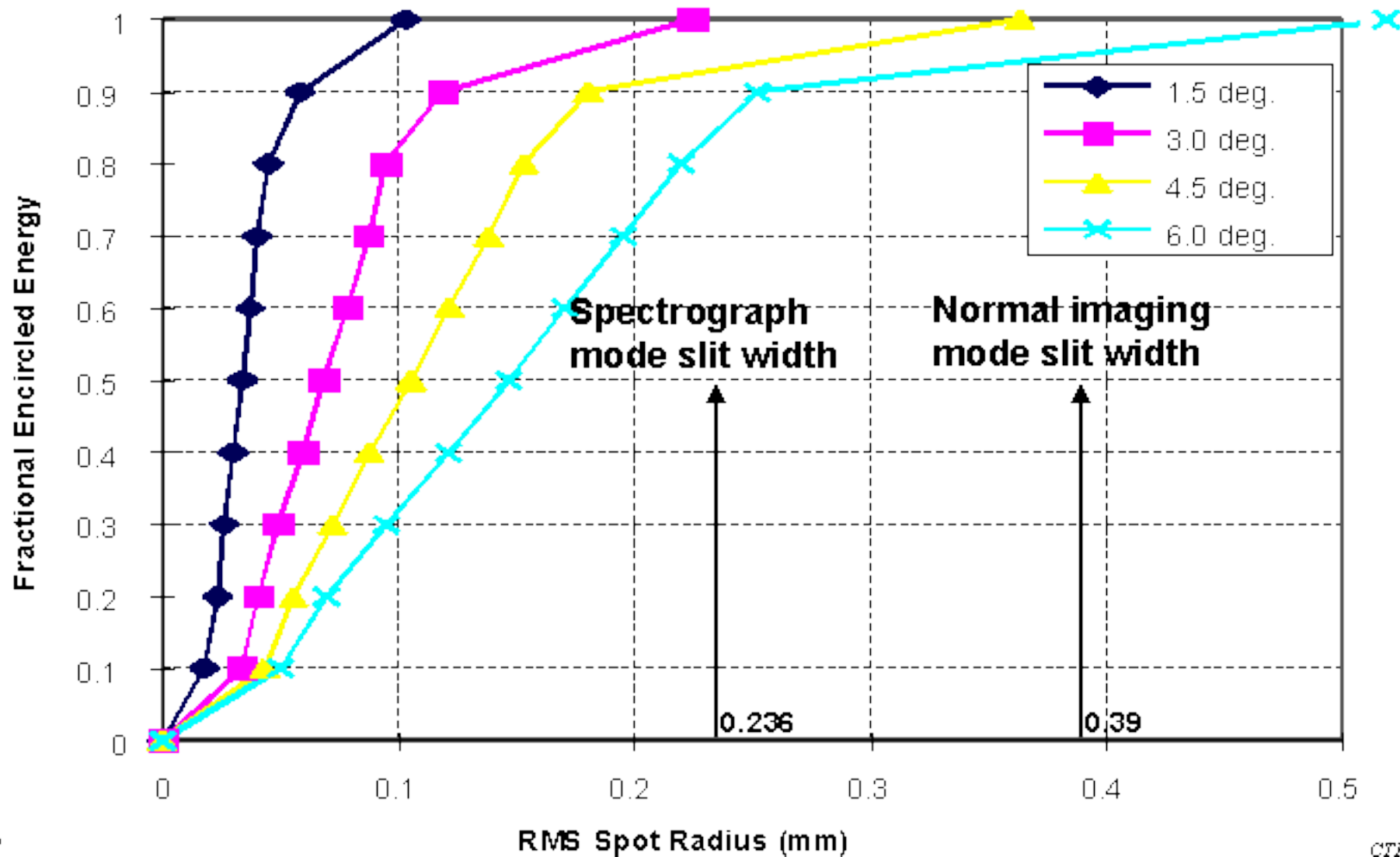


GUVI Focal Planes





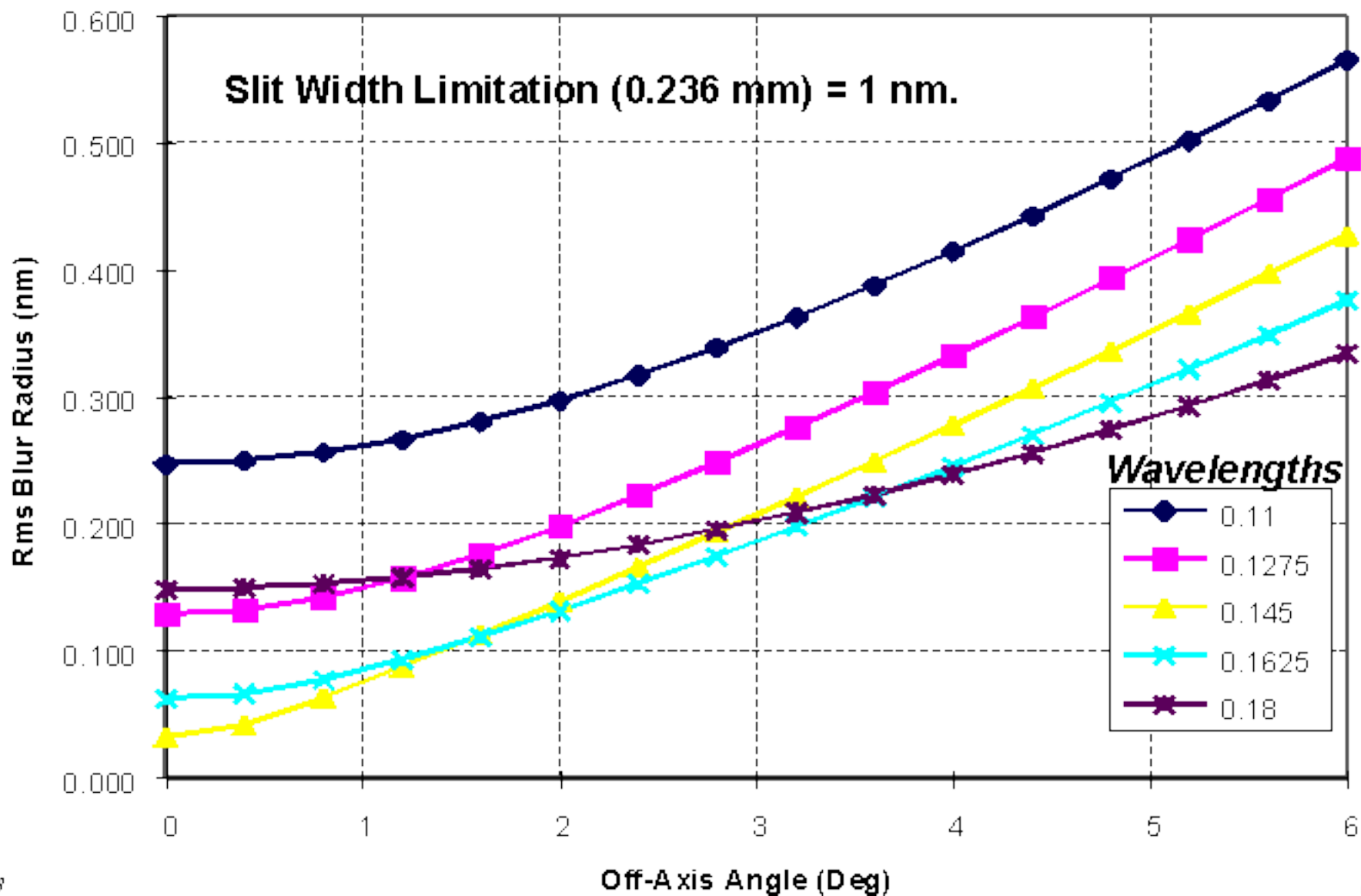
Encircled Energy of the GUVI (Telescope Only)





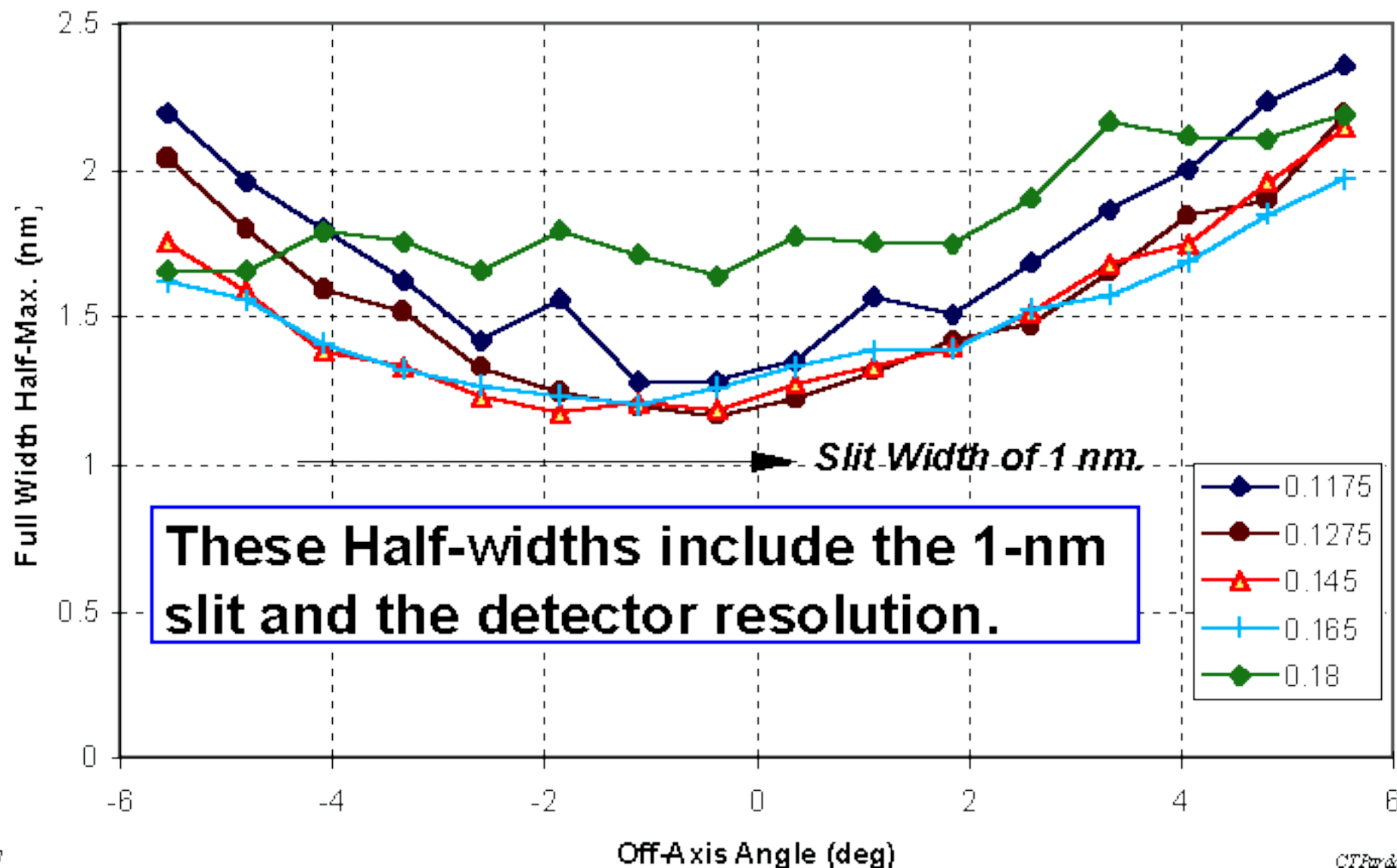
Spectral RMS Blur Width

Width is in nanometers





Measured Full-Width Half-Maxima (From SSUSI SN03 Instrument)





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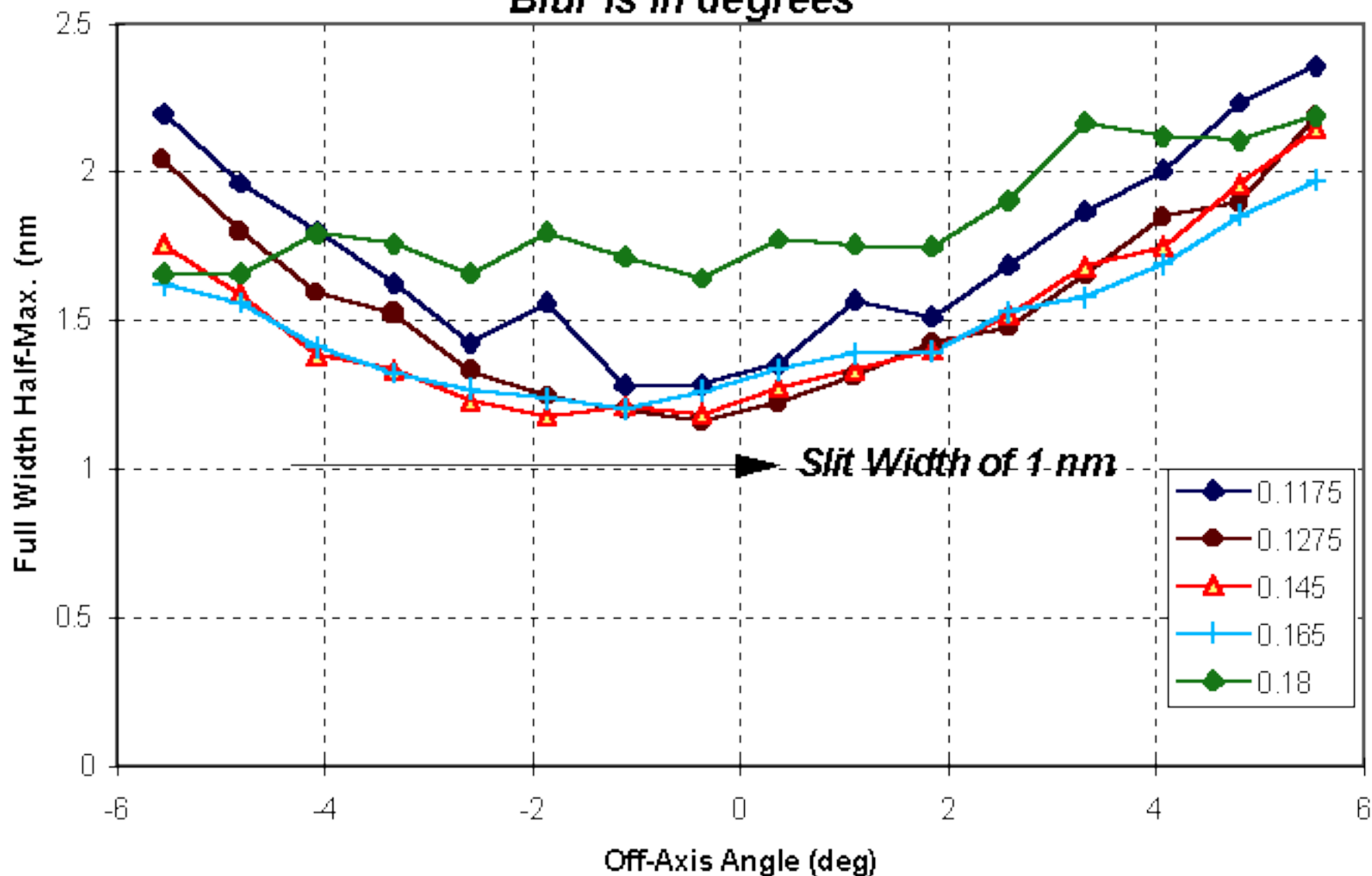
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Spatial RMS Blur Width

Blur is in degrees





RSS Components Movements

Movement	Δx (mm)	Δy (mm)	Δz (mm)	θx (deg)	θy (deg)	θz (deg)
<i>Aperture</i>	0.4	0.4	0.25	2.0	1.0	0.5
<i>Mirror</i>	0.4	0.4	0.25	0.04	0.1	0.3
<i>Slit</i>	0.2	0.06	0.15	10	1.0	0.3
<i>Grating</i>	0.2	0.06	0.15	0.008	0.05	0.3
<i>Flip Mirror</i>	0.07	0.25	0.12	0.1	0.02	0.1

X - Spatial

Y - Spectral

Z - Focus



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Summary

Optical design is identical to the SSUSI

Resolution is limited by slit width

No critical alignment problems exist



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Optical Design Requirements

Field-of-view (width):

Spectrograph (narrow): 0.18 deg.
Imaging (wide): 0.74 deg.
Imaging (medium): 0.30 deg.

Field-of-view (height): 11.84 deg.

Spectral Range: 115 - 180 nm.

Spectral Resolution:

Spectrograph mode: 1.3 nm
Imaging (wide): 4.2 nm
Imaging (medium): 2.0

Spatial Resolution: 0.85 deg. (14 pixels across 11.84 deg.)