

The Tolerance Analysis for GNIRS
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The rms image diameter of the whole system without errors

Grating	10.44 l/mm	31.7 l/mm	110.5 l/mm
Long Blue Camera	13.67	13.65	13.03
Short Blue Camera	12.67	11.82	12.11
Long Red Camera	15.45	14.89	14.64
Short Red Camera	12.71	12.66	11.65
Long Blue Camera & X-dispersion	3.65	NO	NO
Short Blue Camera & X-dispersion	NO	7.45	NO
Long Blue Camera and Polarizer	5.21	5.63	5.59
Short Blue Camera and Polarizer	4.45	6.45	4.65

The error budget for the pre slit system ($l = 1.2 \text{ mm}$)

	rms degradation on slit (%)	Irregularity p-v (l)
Window	0.9	0.08
Offner	4.3	0.15
Filter	1.3	0.05
Sum	4.6	0.18

The error budget for the post slit system ($l = 1.2 \text{ mm}$)

	rms degradation on detector (%)	Irregularity p-v (l)
Collimator	2	0.14
Grating	1	0.25
Cross dispersion folding mirror	1	0.1
Long blue camera	3.3	0.091
Short blue camera	3.2	0.088
Long red camera	1.2	0.085
Short red camera	3.4	0.091
Defocus	2	
Sum (the worst camera)	4.64	0.32