

Comparison of the 3 requested NOT gratings

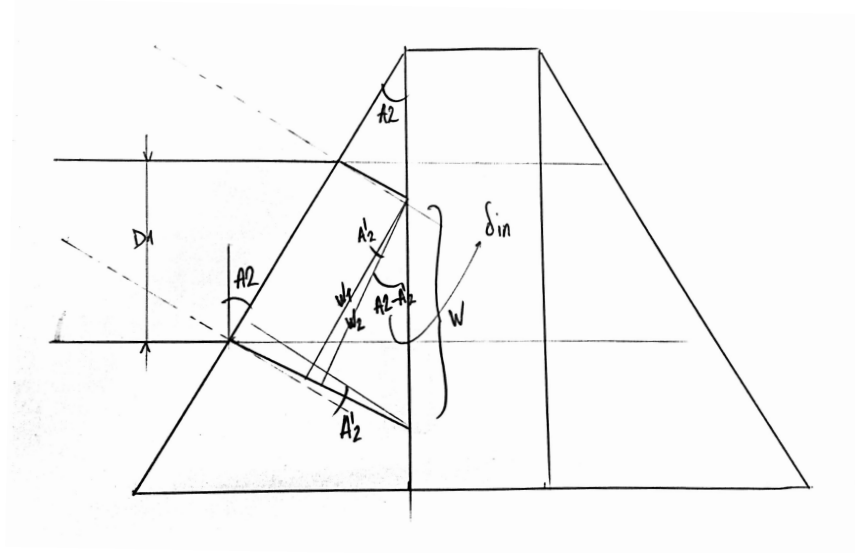
	Central [nm]	Range [nm]	Dispersion [$\text{\AA}/\text{px}$]	Resolution	apex angle A [$^\circ$]	spectral length [mm]	lines/mm
BLUE	430	337 - 523	0,923	1113,16	24,499	30,214	1080
GREEN	565	443 - 687	1,216	1112,03	24,857	30,090	820
RED	735	576 - 894	1,583	1112,48	25,095	30,128	630

NOTES:

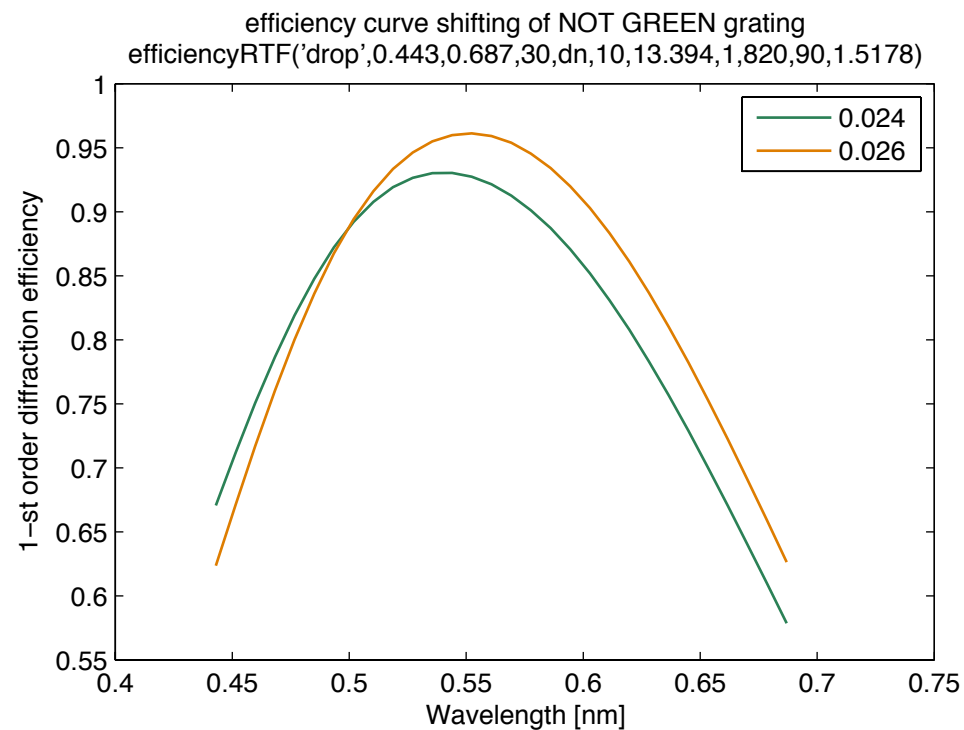
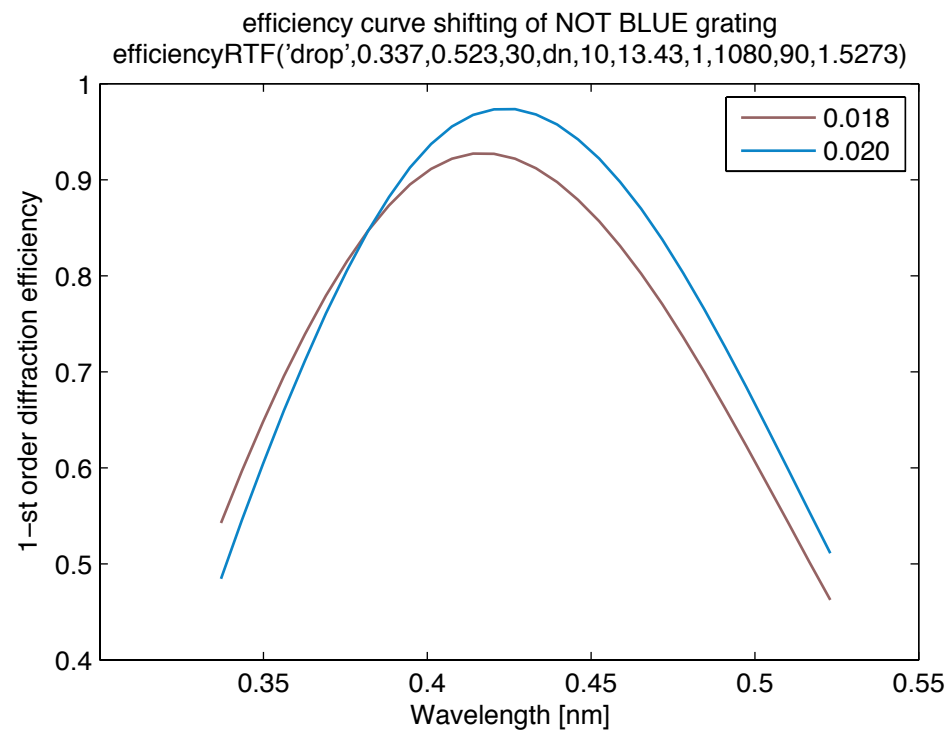
- 1) considering a fixed parameter or the BK7 prism/s refractive index:
 $n_{\text{prism}} = 1.5273$ @ 430 for the BLUE grating;
 $n_{\text{prism}} = 1.5178$ @ 565 for the GREEN grating;
 $n_{\text{prism}} = 1.5122$ @ 735 for the RED grating.

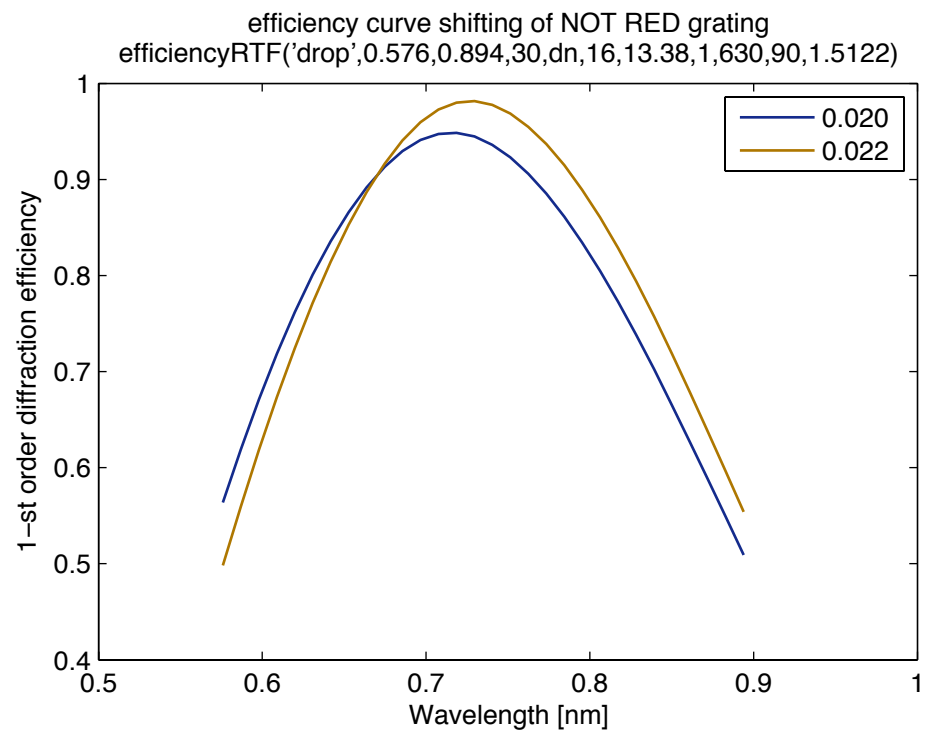
length of the CCD is 30.72 mm

Figure 1:

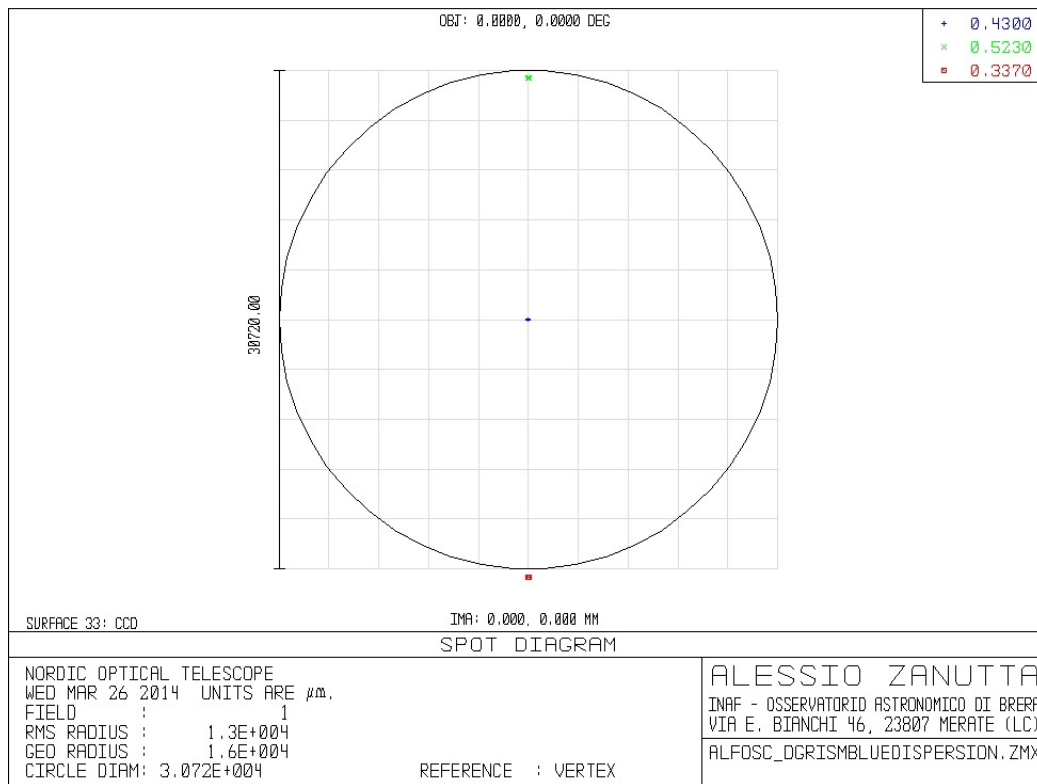


Simulated efficiency curves (RCWA) of the three gratings. Two different options of refractive index modulation are presented for each GRISM.



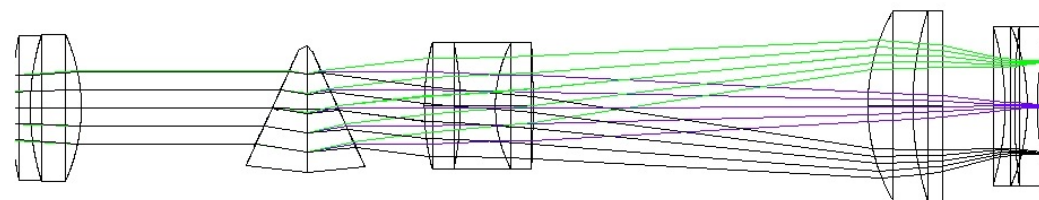


ZEMAX SIMULATIONS - Standard 2 prisms BLUE GRISM @ different wavelengths reported in figure - prisms angle = 24.499°:

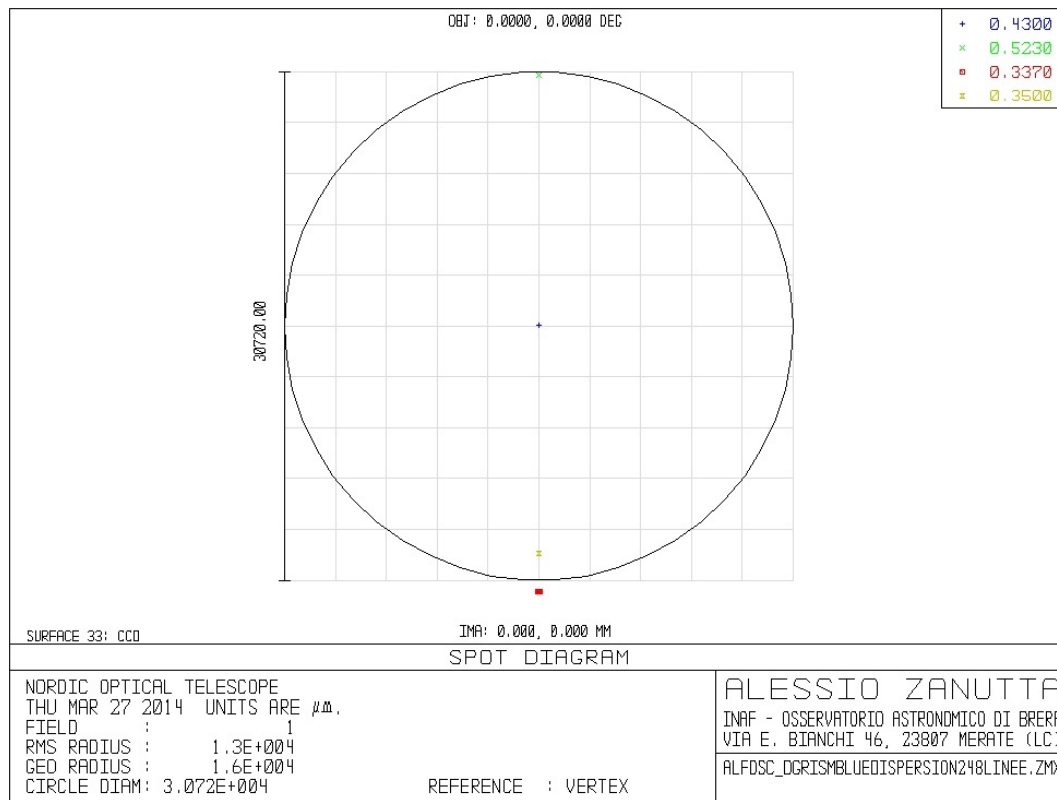


NOTE:

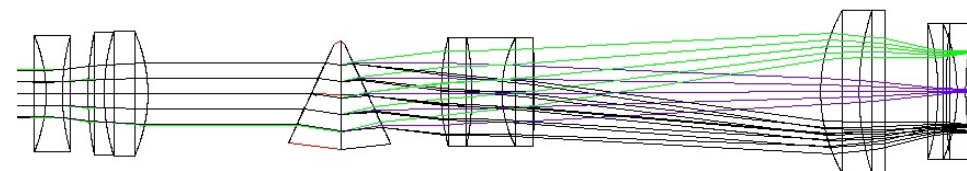
For all the simulations we used a centred pin hole as aperture (only one field)



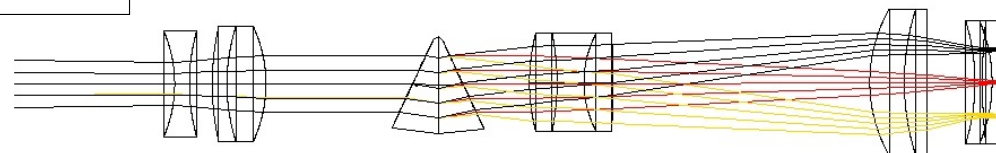
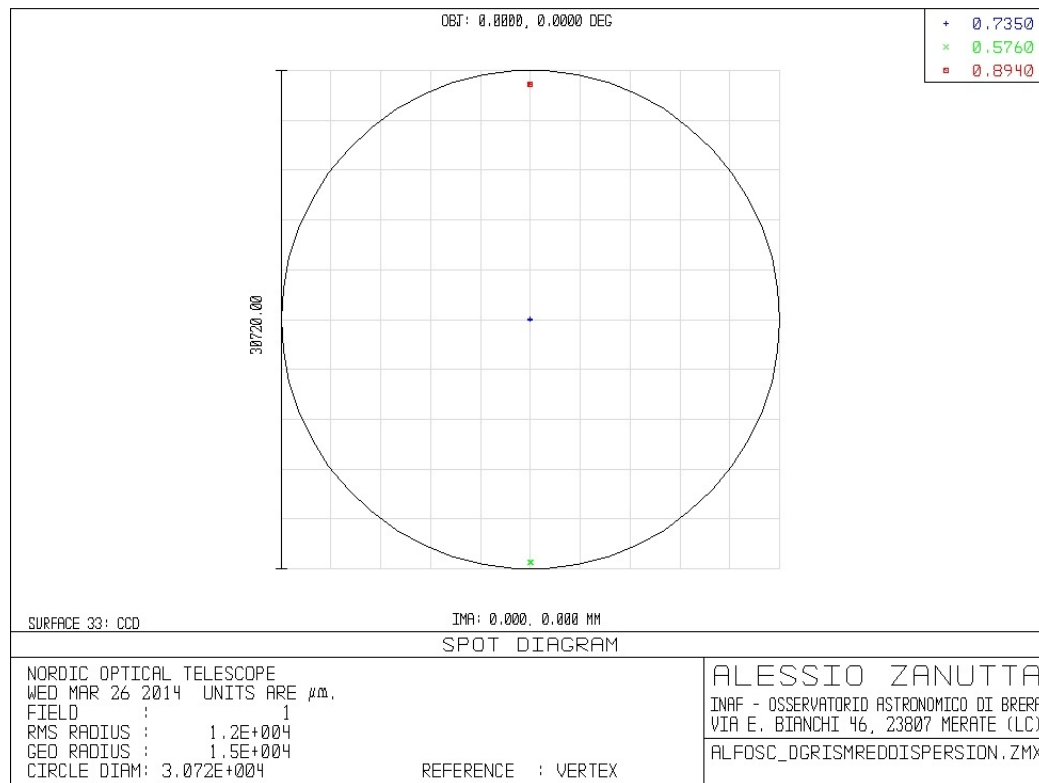
ZEMAX SIMULATIONS - Standard 2 prisms BLUE GRISM @ different wavelengths reported in figure - prisms angle = 24.8° and 1095 lines/mm:



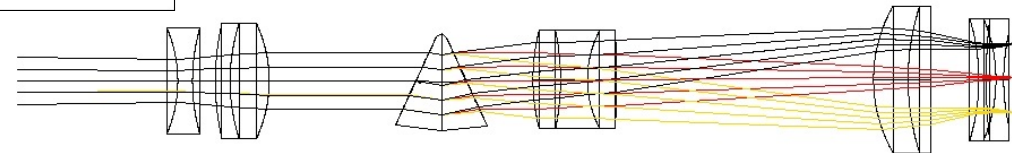
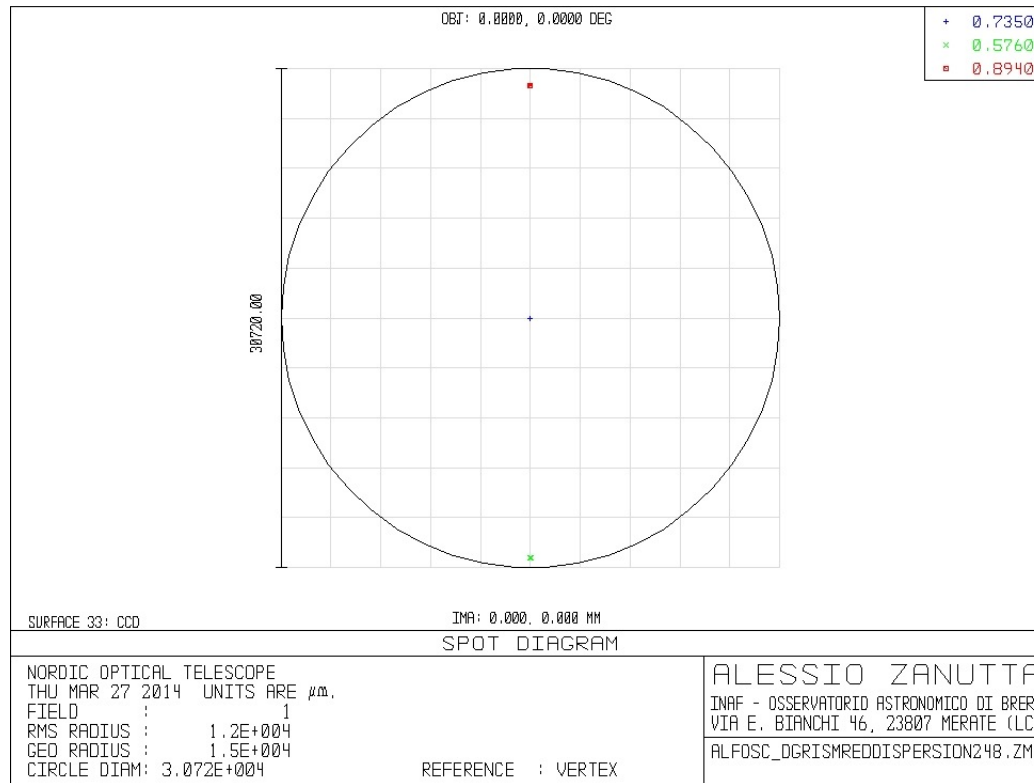
NOTE:
in this case the 337nm line is still outside the CCD (red dot);
is it a strictly important line?
would it be accepted like in the picture or is it better that we re-design the grism to include the 337nm line?



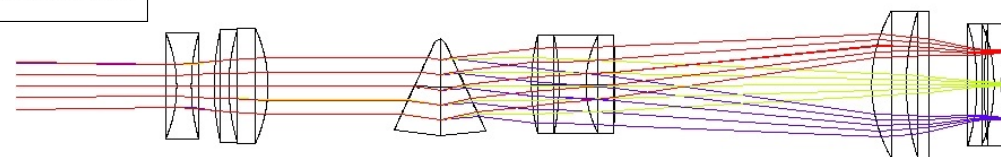
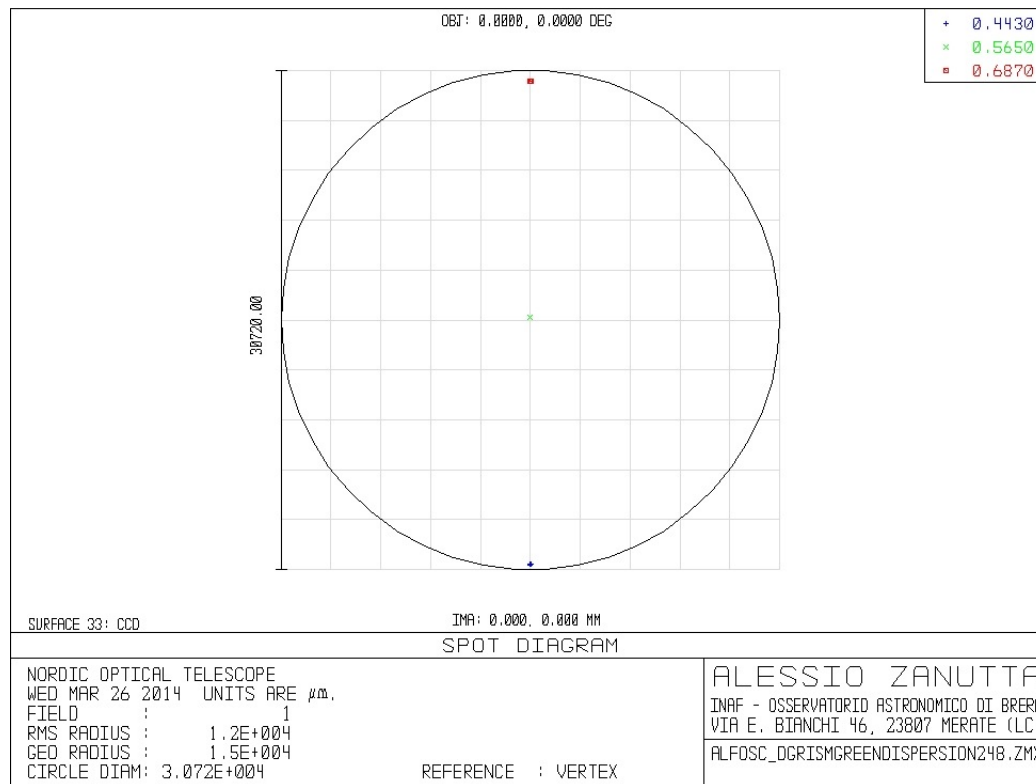
ZEMAX SIMULATIONS - Standard 2 prisms RED GRISM @ different wavelengths reported in figure - prisms angle = 25.095°:



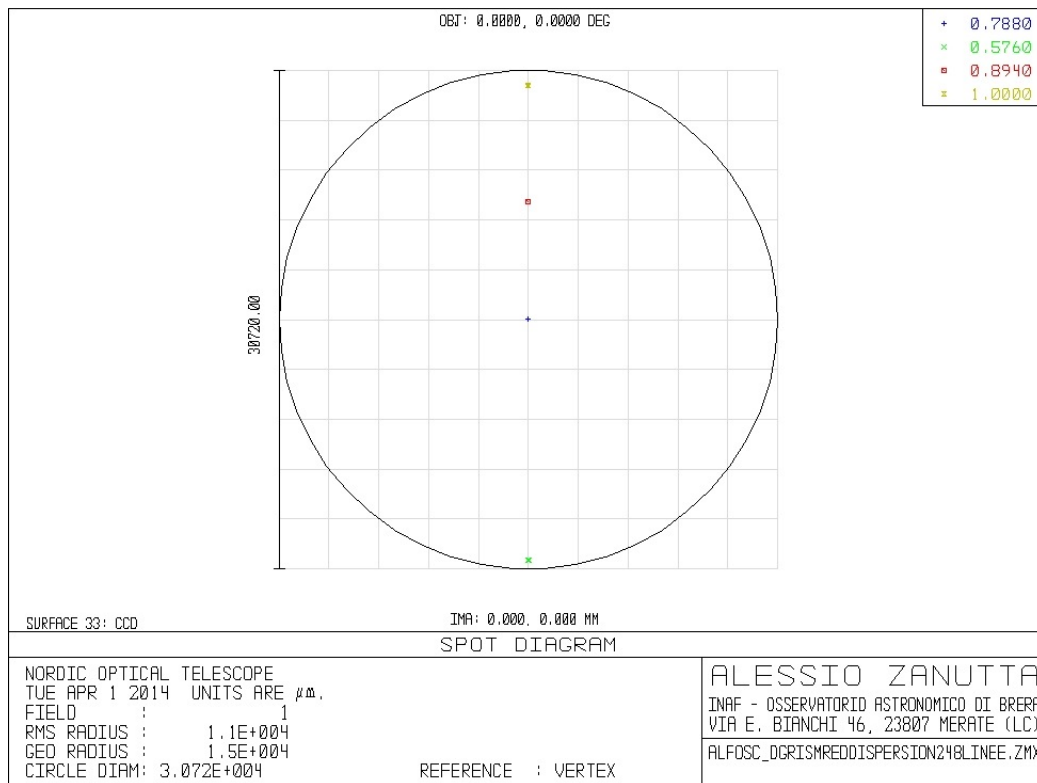
ZEMAX SIMULATIONS - Standard 2 prisms RED GRISM @ different wavelengths reported in figure - prisms angle = 24.8° and 622 lines/mm:



ZEMAX SIMULATIONS - Standard 2 prisms GREEN GRISM @ different wavelengths reported in figure - prisms angle = 24.8°:



ZEMAX SIMULATIONS - Standard 2 prisms **RED GRISM** with an **EXTENDED** range upto 1000 nm:



the resulting dispersion is **2.1 Å/pix** and $R = 888$;
 Apex angle of the prism is **20.75°**;
 central wavelength is 788 nm;
 lines/mm are 480.

