

## Color File Generator - Cross Polarization

(\* Define domain of entire color scheme \*)

lo=0;

hi=4095;

width=hi-lo;

(\* Define piecewise domain functions for red, green, blue \*)

$$\text{fnred1}[x\_]:= \left(1 - \left(\frac{\text{width} - 2(x + 2047)}{\text{width}}\right)^2\right)^{\frac{1}{2}};$$

$\text{fnred2}[x\_]:=0;$

$\text{fnred}[x\_]:= \text{fnred1}[x]; 0 \leq x \leq 2047;$

$\text{fnred}[x\_]:= \text{fnred2}[x]; 2047 < x \leq 4095;$

$\text{fngrn1}[x\_]:=0;$

$$\text{fngrn2}[x\_]:= \left(1 - \left(\frac{\text{width} - 2(x - 2047)}{\text{width}}\right)^2\right)^{\frac{1}{2}};$$

$\text{fngrn}[x\_]:= \text{fngrn1}[x]; 0 \leq x \leq 2047;$

$\text{fngrn}[x\_]:= \text{fngrn2}[x]; 2047 < x \leq 4095;$

$\text{fnblu}[x\_]:=0;$

(\* Define a saturation function for reference use \*)

$\text{fnsat}[x\_]:= (\text{fnred}[x] + \text{fngrn}[x] + \text{fnblu}[x]) / 3;$

(\* Plot red, green and blue functions along with saturation \*)

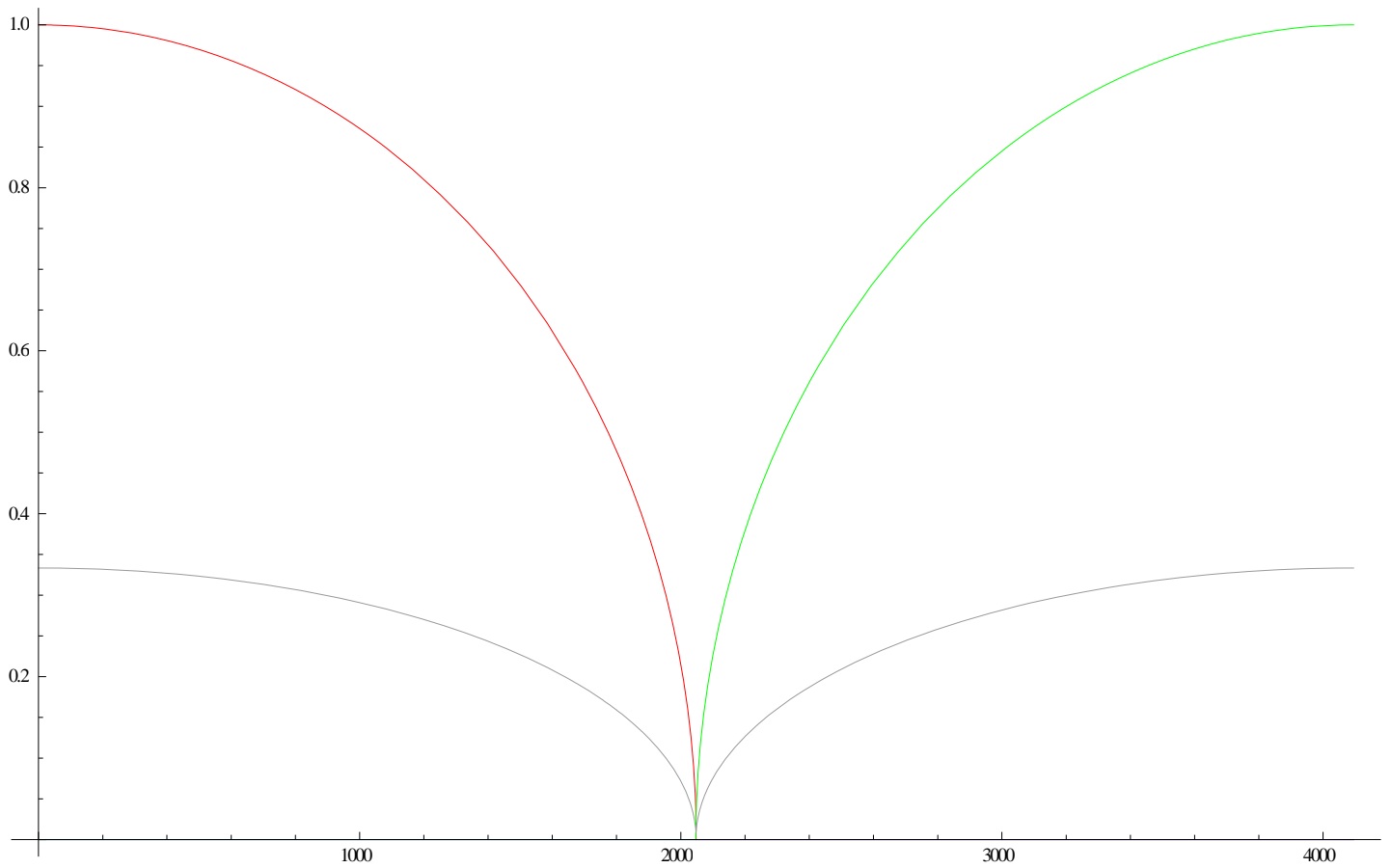
$\text{Plot}[\{\text{fnred}[x], \text{fngrn}[x], \text{fnblu}[x], \text{fnsat}[x]\}, \{x, \text{lo}, \text{hi}\}, \text{PlotStyle} \rightarrow \{\{\text{RGBColor}[1, 0, 0], \text{Thin}\}, \{\text{RGBColor}[0, 1, 0], \text{Thin}\}, \{\text{RGBColor}[0, 0, 1], \text{Thin}\}, \{\text{RGBColor}[\text{.6}, \text{.6}, \text{.6}], \text{Thin}\}\}]$

(\* create a table of "width" number of RGB value triplets, each value ranging from 0 to 1 \*)

$\text{Colors} = \text{Table}[\{\text{fnred}[i], \text{fngrn}[i], \text{fnblu}[i]\}, \{i, \text{lo}, \text{hi}\}];$

(\* plot the color table ceated above \*)

$\text{Graphics}[\text{Raster}[\{\text{Colors}\}], \text{AspectRatio} \rightarrow .2]$



(\* Create Radio-Sky Spectrograph color definitions file \*)

Colors;

ColorDefs=Table[65536\*Round[255\*fnblu[i]]+256\*Round[255\*fngnrn[i]]+Round[255\*fnred[i]],{i,lo,hi}];

Export["C:\\Program Files\\Spectrograph\\CrossPolarization.txt",ColorDefs]

C:\\Program Files\\Spectrograph\\CrossPolarization.txt