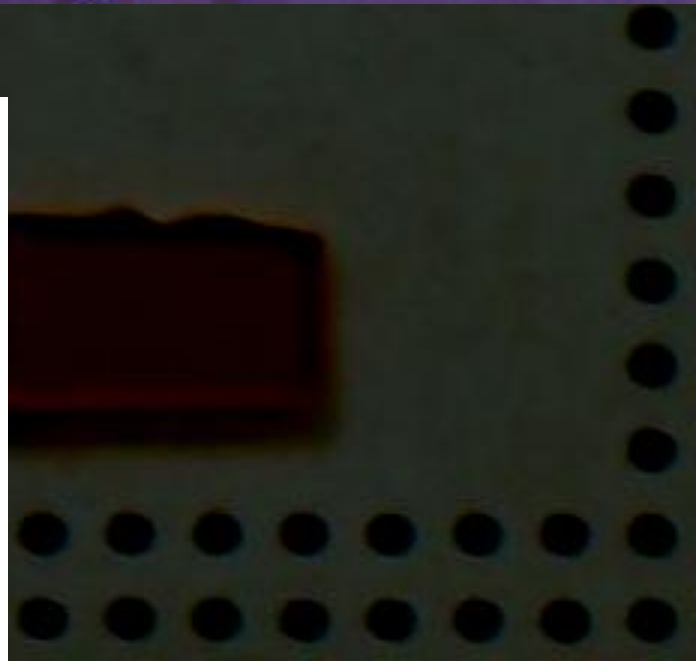
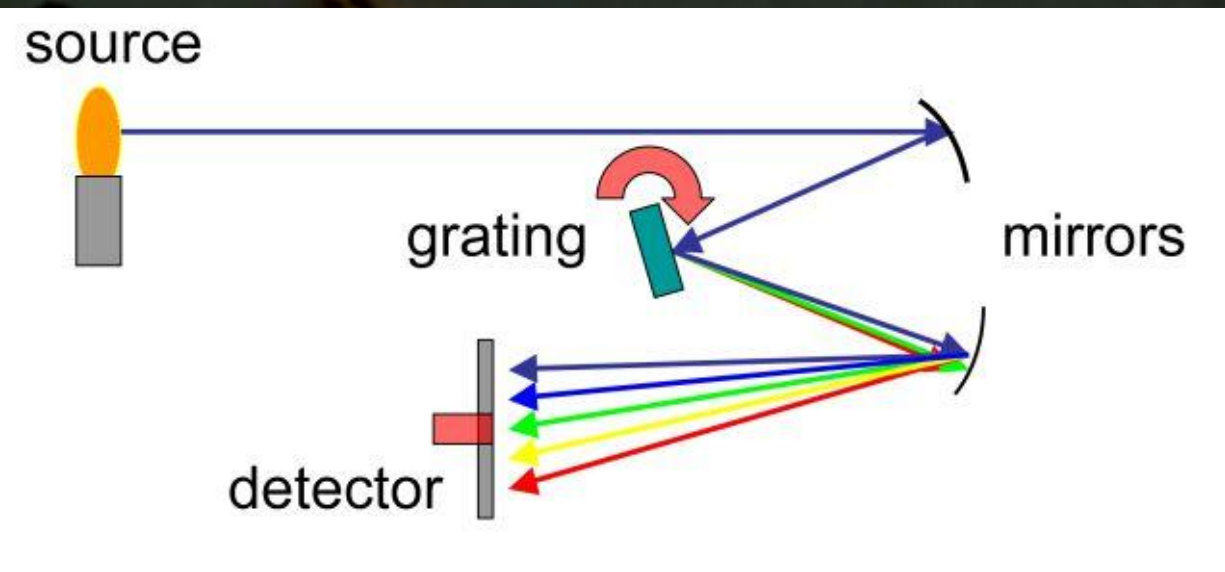




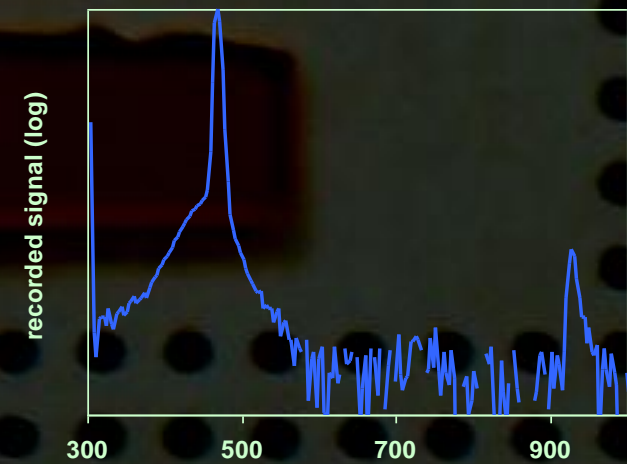
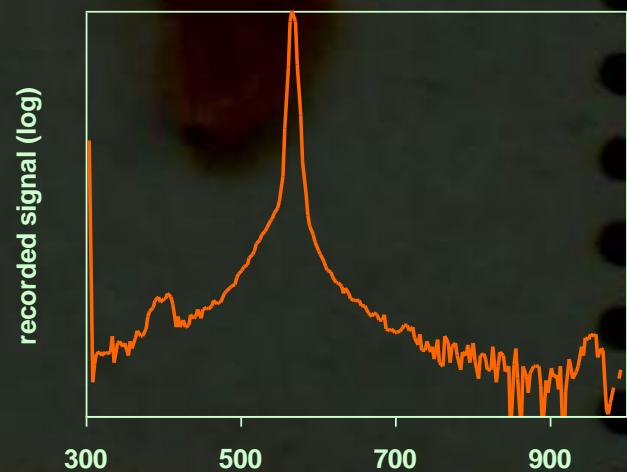
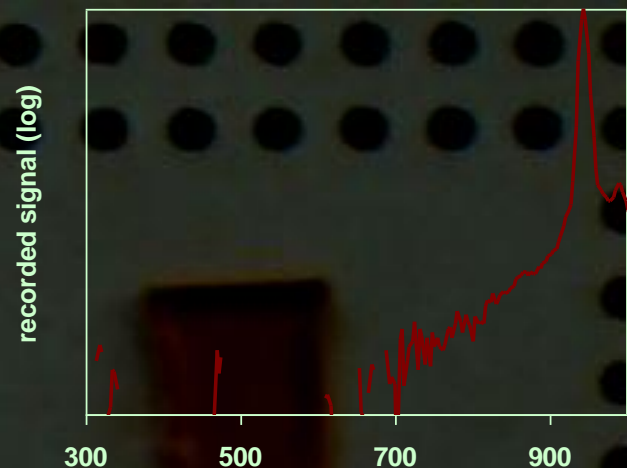
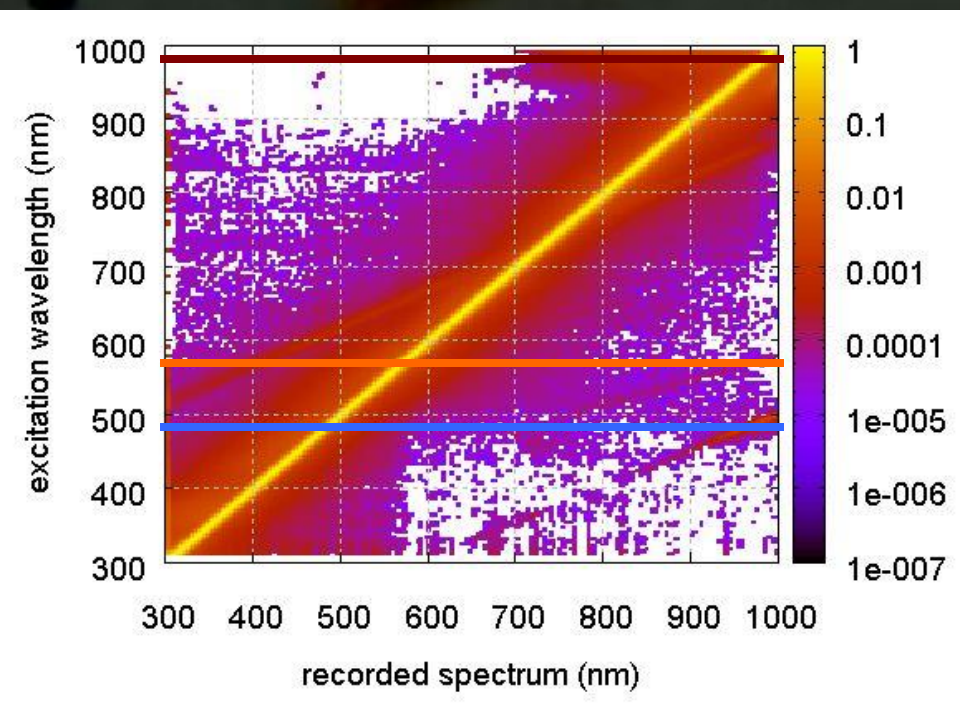
Straylight correction for TriOS RAMSES spectroradiometers

Ilmar Ansko, Joel Kuusk, Anu Reinart
(Tartu Observatory, Estonia)

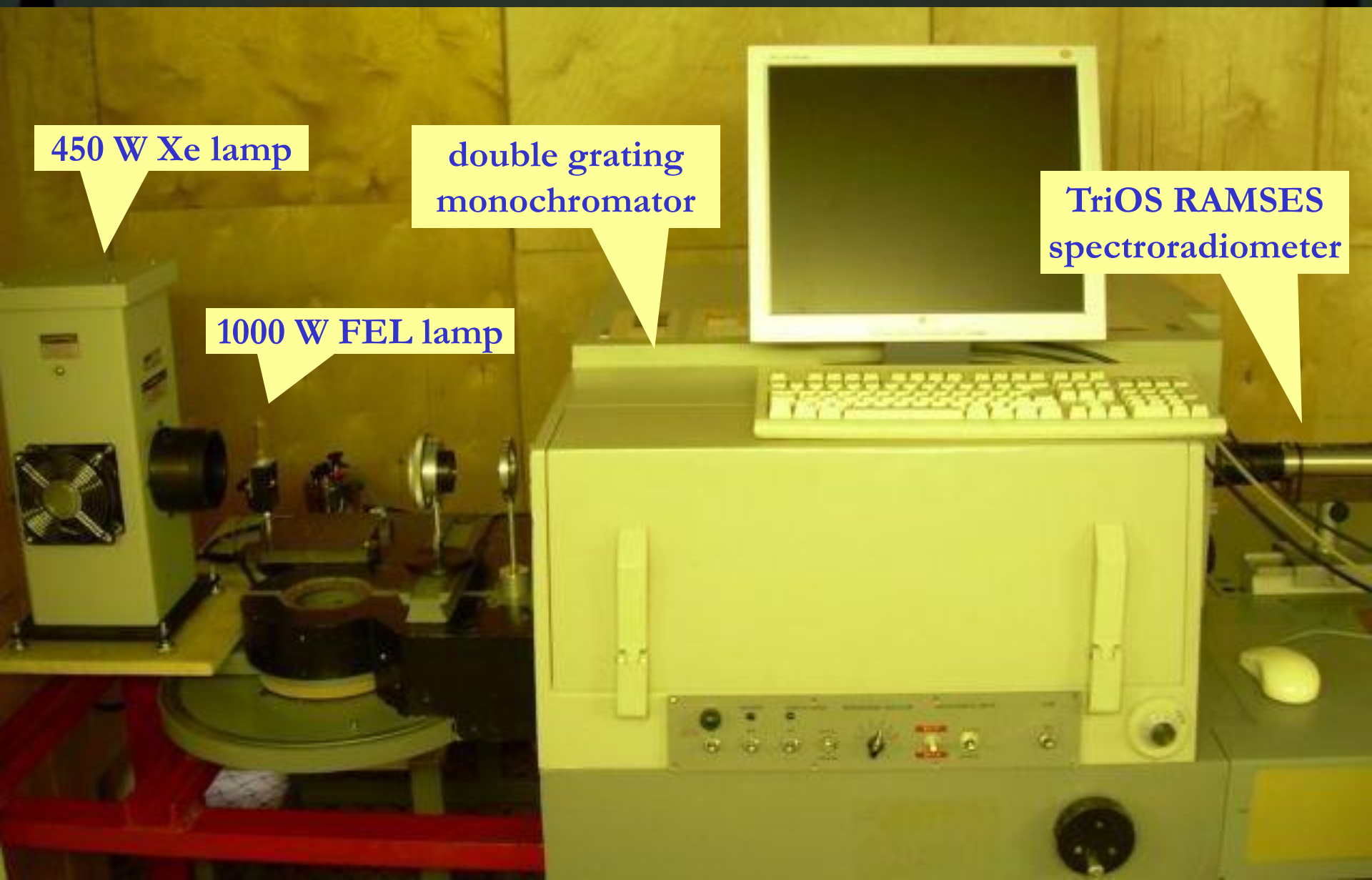
Straylight: the problem



Slit-scattering function



Measurement setup



450 W Xe lamp

double grating
monochromator

TriOS RAMSES
spectroradiometer

1000 W FEL lamp

Data processing

```
cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Admin\My Documents\ramses\deconv>fpc deconv2.pp
Free Pascal Compiler version 2.4.2 [2010/11/10] for i386
Copyright (c) 1993-2010 by Florian Klaempfl
Target OS: Win32 for i386
Compiling deconv2.pp
deconv2.pp(126,5) Note: Local variable "r1" is assigned but never used
deconv2.pp(275,5) Note: Local variable "r1" is assigned but never used
deconv2.pp(26,5) Note: Local variable "roo" is assigned but never used
Linking deconv2.exe
338 lines compiled, 0.4 sec , 67552 bytes code, 12520 bytes data
3 note(s) issued

C:\Documents and Settings\Admin\My Documents\ramses\deconv>
```

z_SAM_8166.dat - WordPad

0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
0.4029894	0.7545688	1.0000000	0.7563423	0.320355
0.1277440	0.3074792	0.7695075	1.0000000	0.740316
0.0697693	0.0464787	0.2914857	0.7543247	1.000000
0.0538683	0.0077418	0.0424788	0.2829165	0.745015
0.0057235	0.0072413	0.0406635	0.281275	
0.0047911	0.0052399	0.0067562	0.037652	
0.0039666	0.0043428	0.0048639	0.006260	
0.0033098	0.0036145	0.0039750	0.004465	
0.0028343	0.0031341	0.0033431	0.003642	
0.0025444	0.0026851	0.0029126	0.003184	
0.0024412	0.0025785	0.0027880	0.002963	

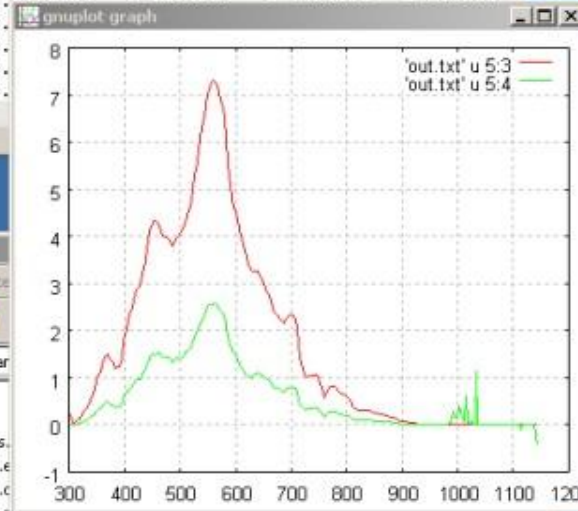
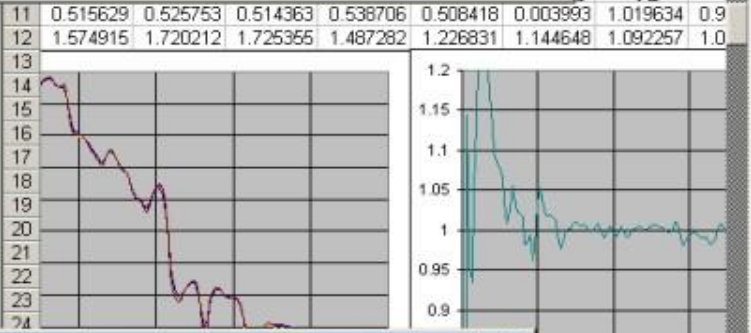
```
deconv2.pp
File Edit

(3 R.
(m0
(m5,

program deconv2;
($APPTYPE CONSOLE)
uses Windows, SysUtils;

type massiv = array[0..255] of double;
pmassiv = ^massiv;
riist = record
  name: string[15];
  ini_file, back_file, cal_
  dark_start, dark_stop: lo
  c0s, c1s, c2s, c3s, c4s,
  exp: word;
  ...;
end;

var
  plot;
```



```
gnuplot
File Plot Expressions Functions General Axes Chart Styles 3D Help

Replot Open Save ChDir Print PrtSc Prev Next

type help to access the on line reference manual.
The gnuplot FAQ is available from http://www.gnuplot.info/faq/
Send bug reports and suggestions to <http://sourceforge.net/projects/gnuplot/

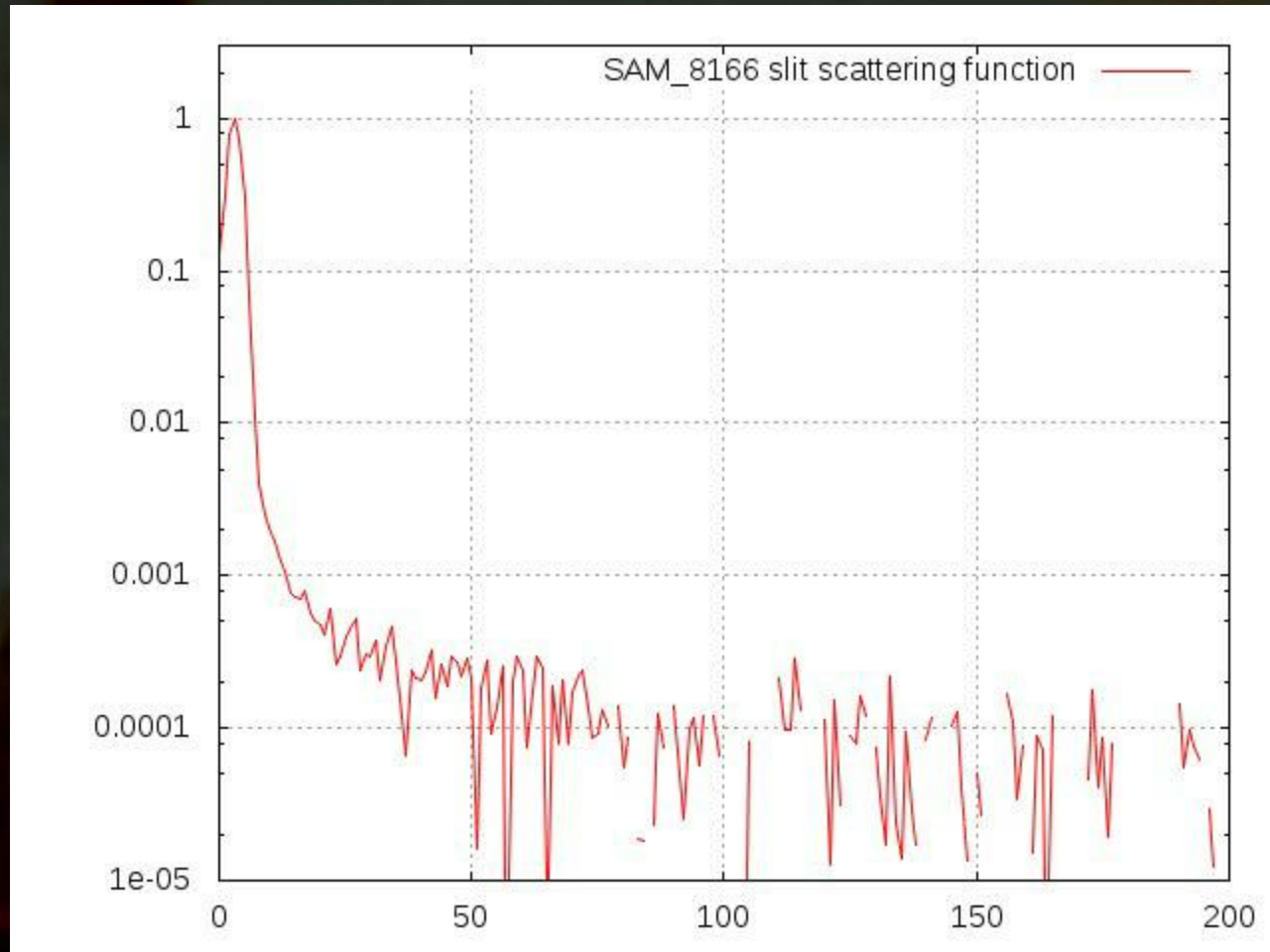
Terminal type set to 'windows'
gnuplot> set grid plot 'out.txt' u 5:3 w line,'out.txt' u 5:4 w line
undefined variable: plot

gnuplot> plot 'out.txt' u 5:3 w line,'out.txt' u 5:4 w line
gnuplot> set grid
gnuplot> plot 'out.txt' u 5:3 w line,'out.txt' u 5:4 w line
gnuplot> set term windows font 'arial,10'
Terminal type set to 'windows'
Options are 'color noenhanced font "arial, 10"'
gnuplot> plot 'out.txt' u 5:3 w line,'out.txt' u 5:4 w line
gnuplot> -
```

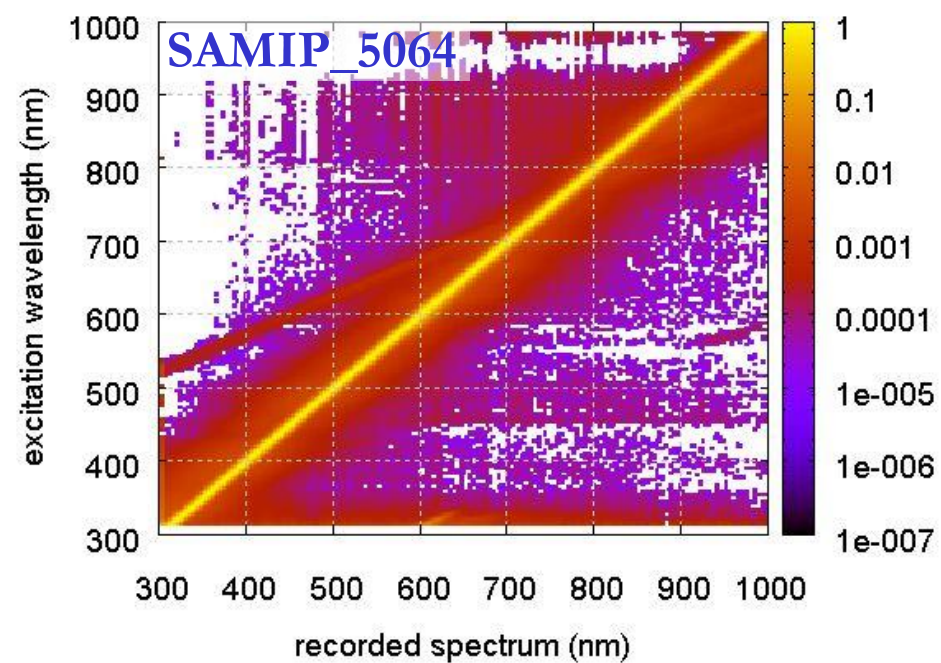
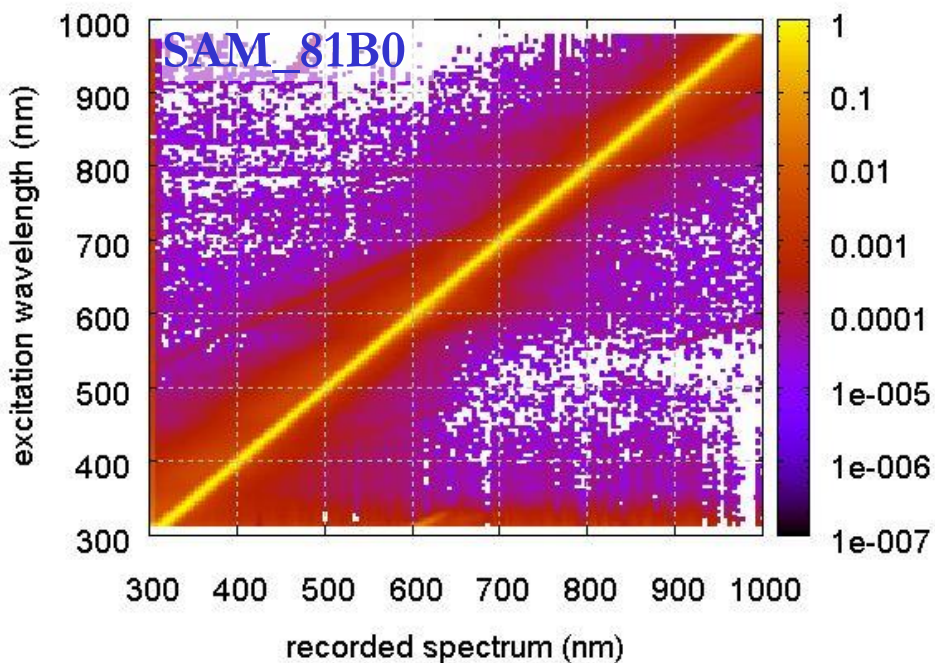
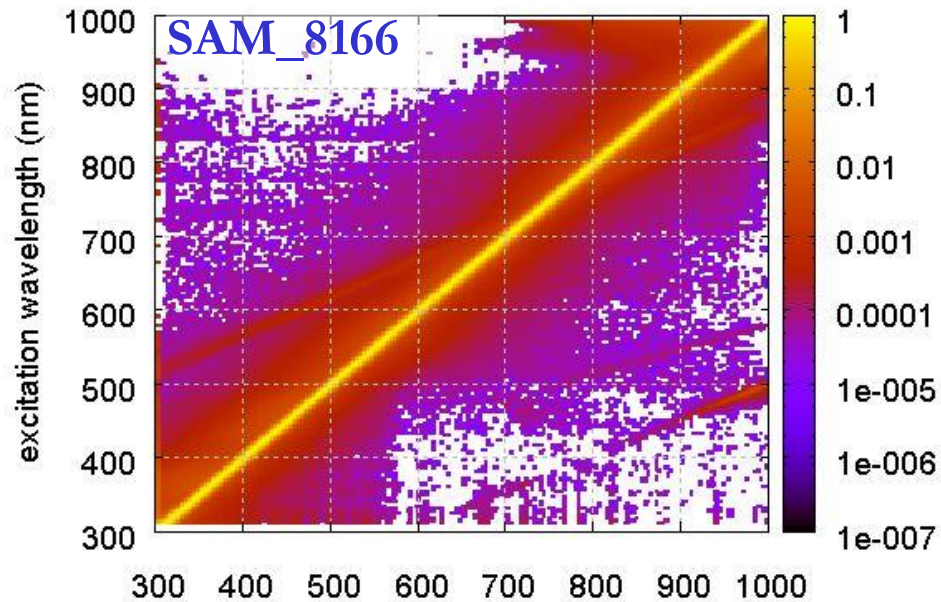
25806	1.004707	0.9
65825	1.001024	1.0
41427	1.005414	1.
23357	1.002487	1.0

- out.txt
- pp0
- pp1
- pp2

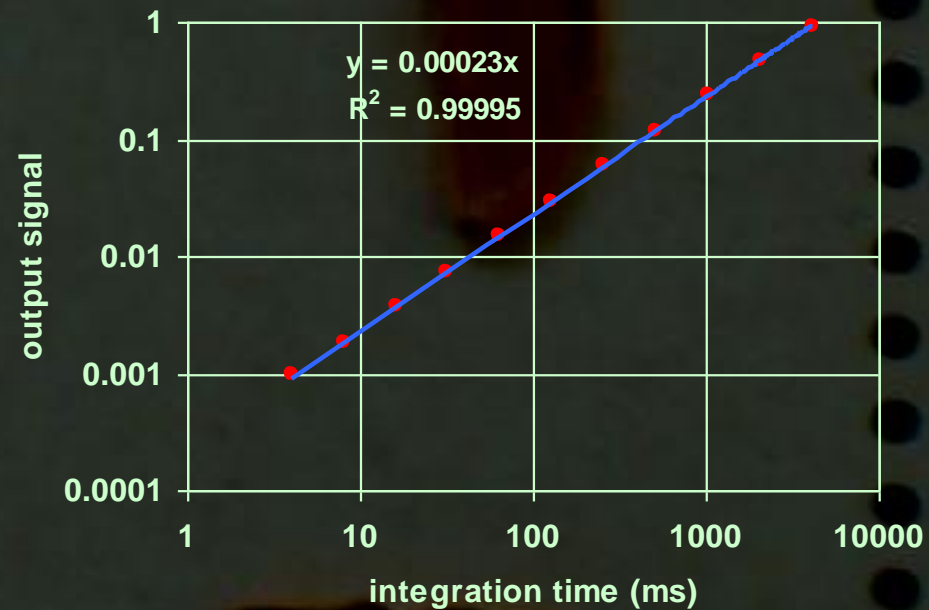
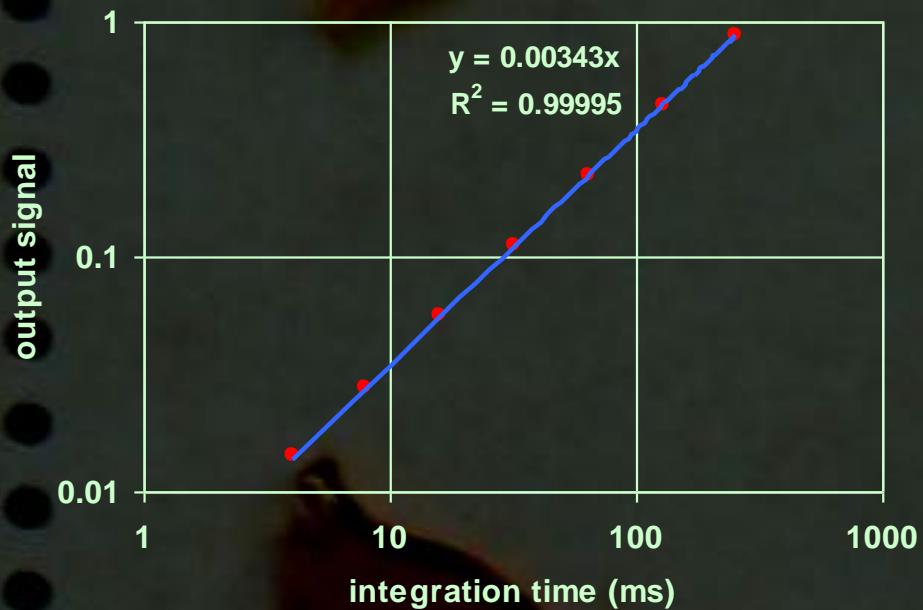
RAMSES ARC SAM_8166 slit-scattering function



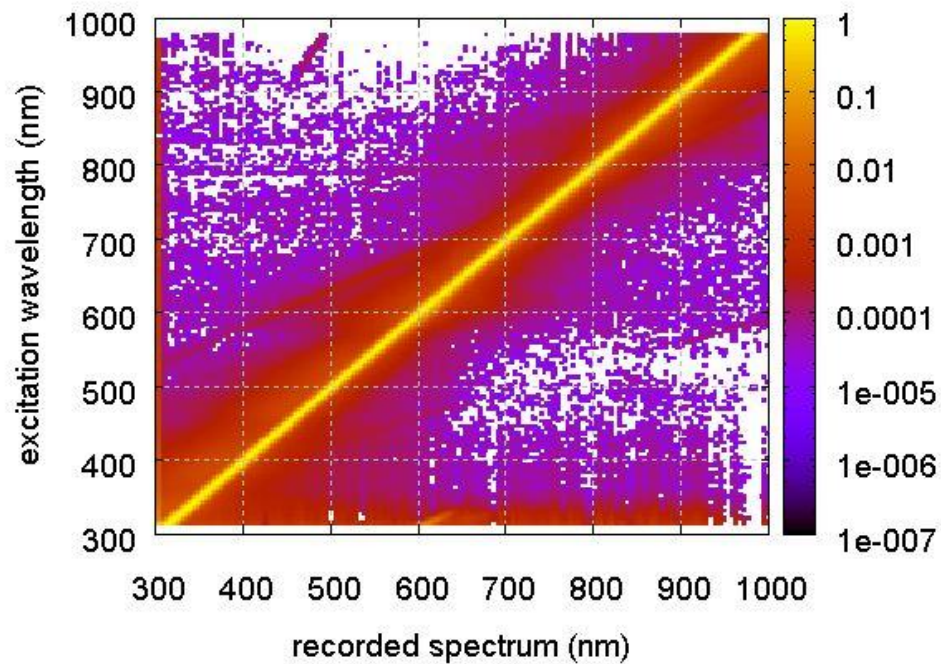
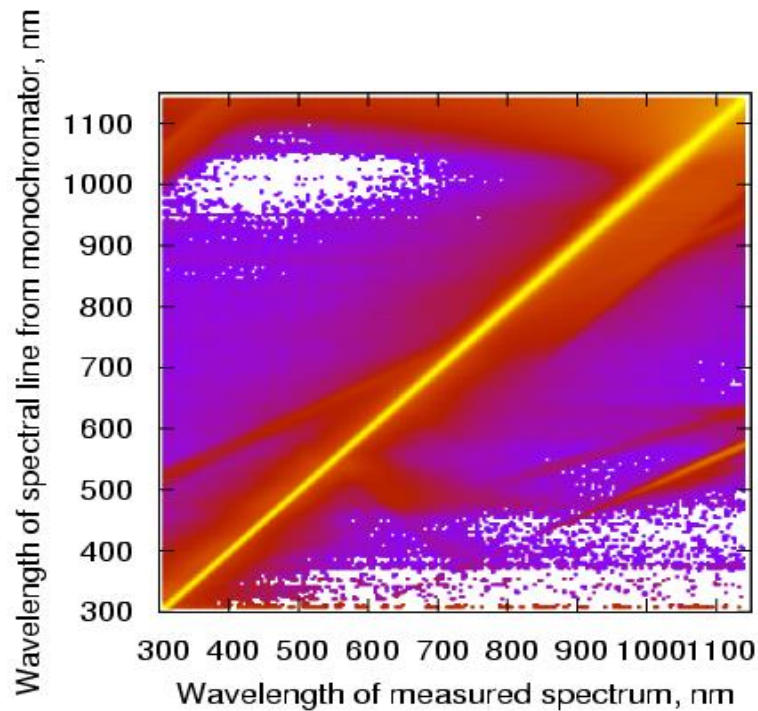
Results: slit-scattering function



Radiometric linearity



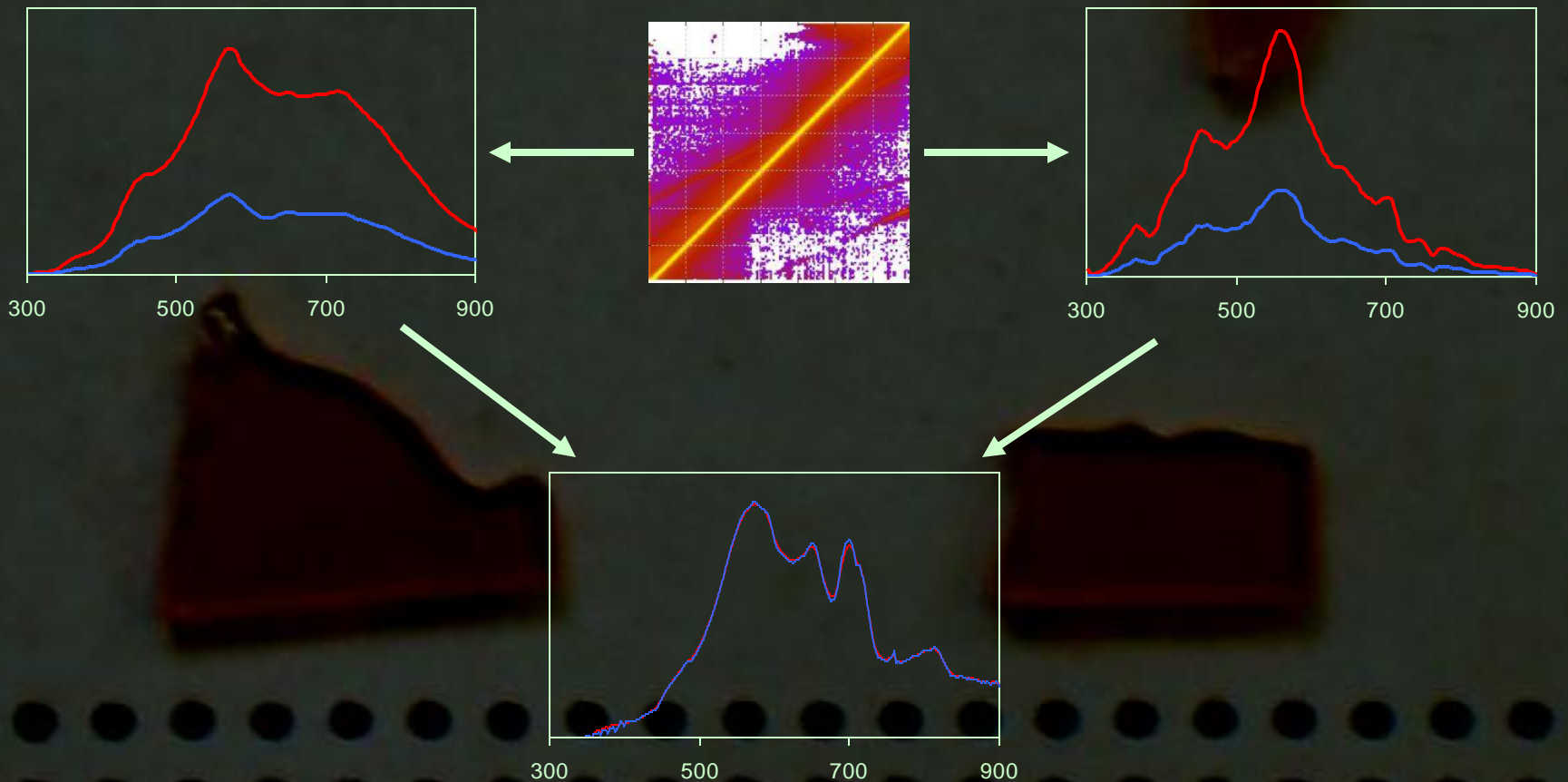
Slit-scattering function: comparison to Zeiss MMS1



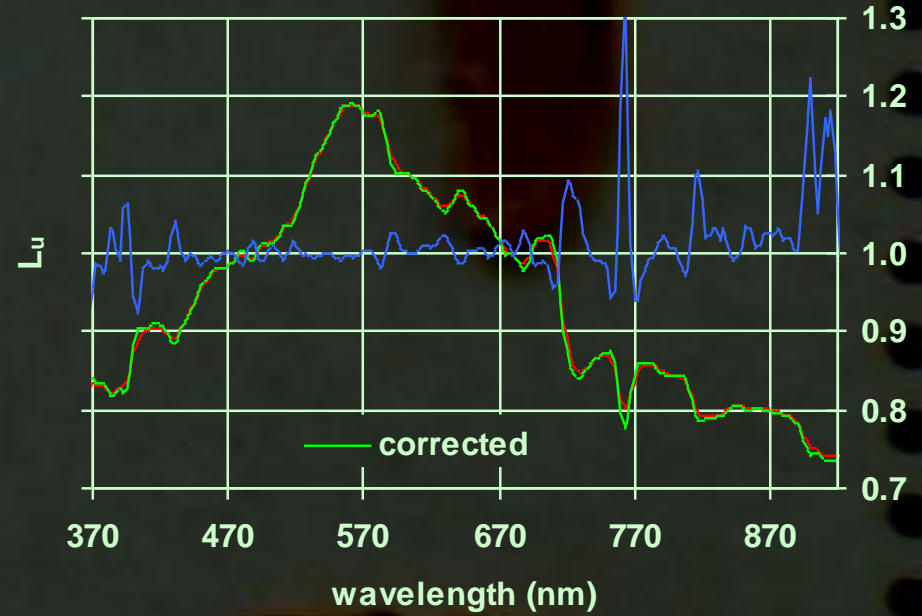
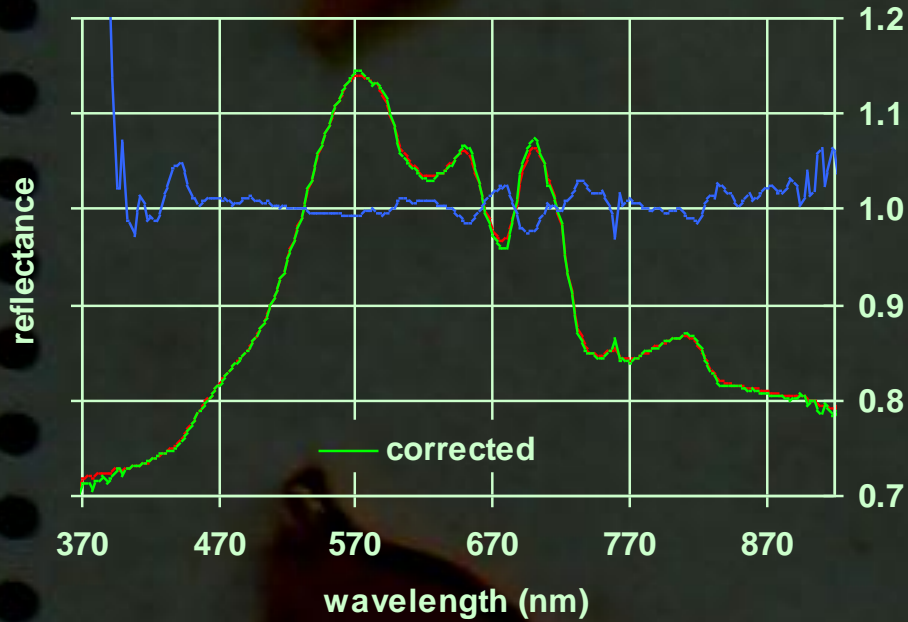
Straylight correction

a) [Kostowski HJ: Reliable Spectroradiometry]

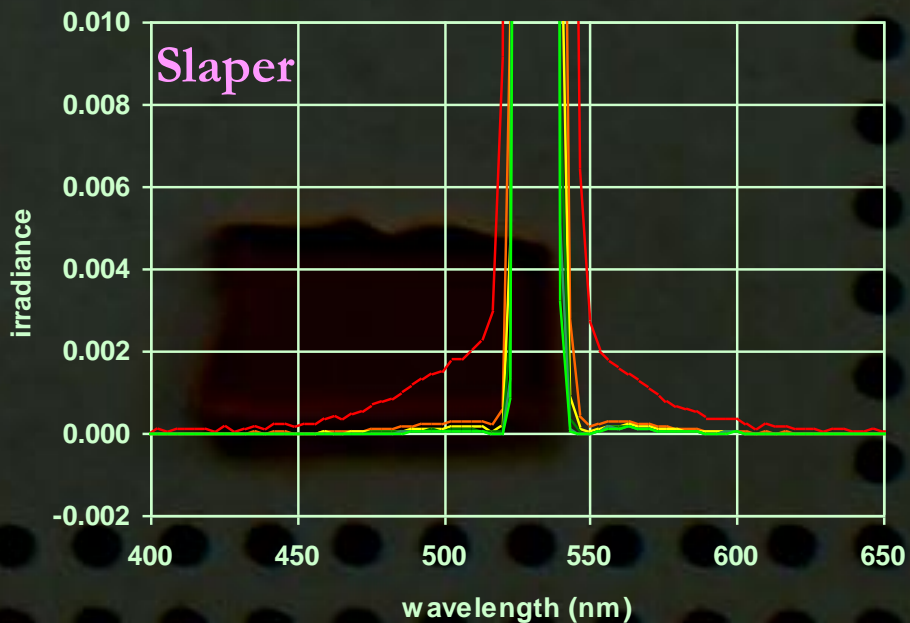
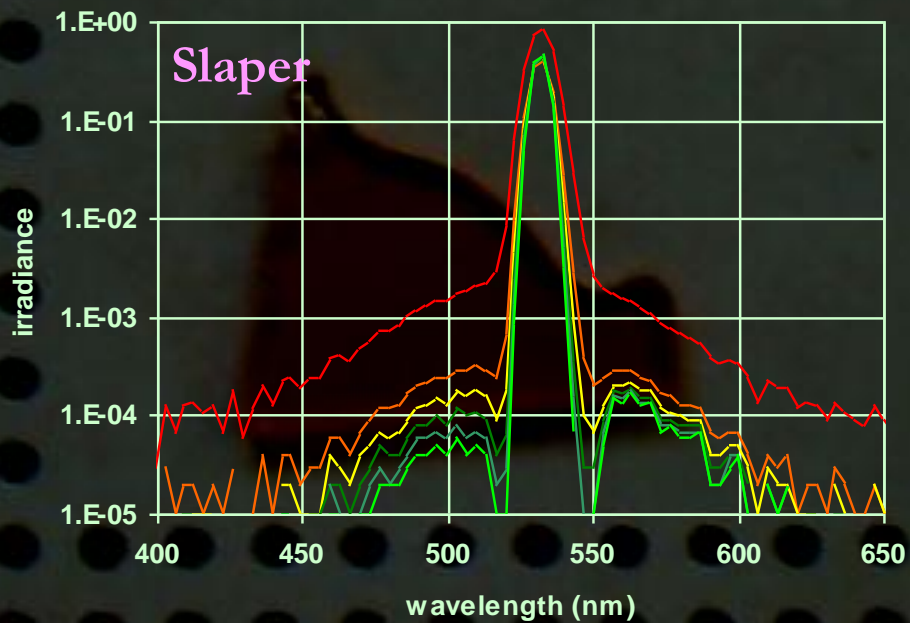
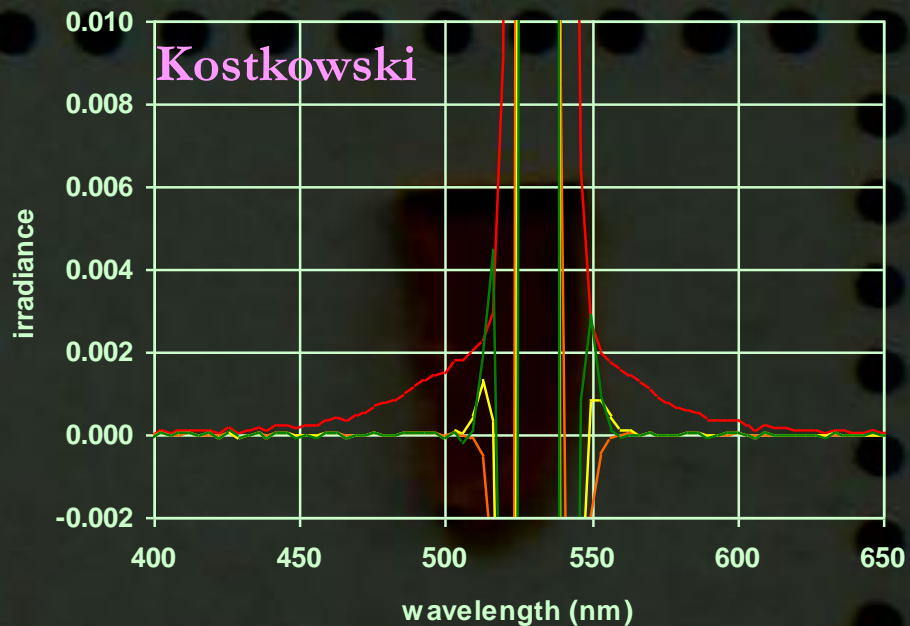
b) [Slaper H et al.: Comparing ground-level spectrally resolved solar UV measurements using various instruments: A technique resolving effects of wavelength shift and slit width]



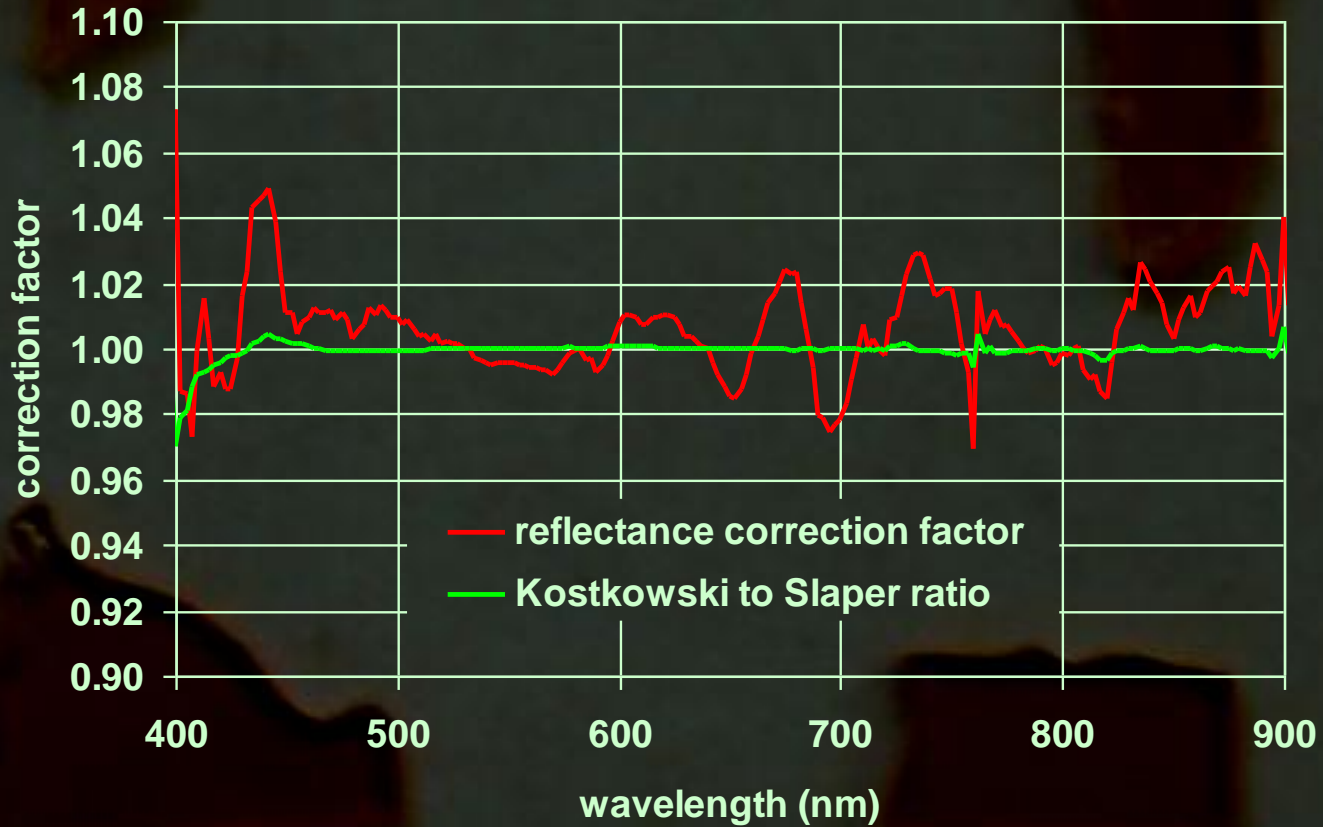
Straylight correction



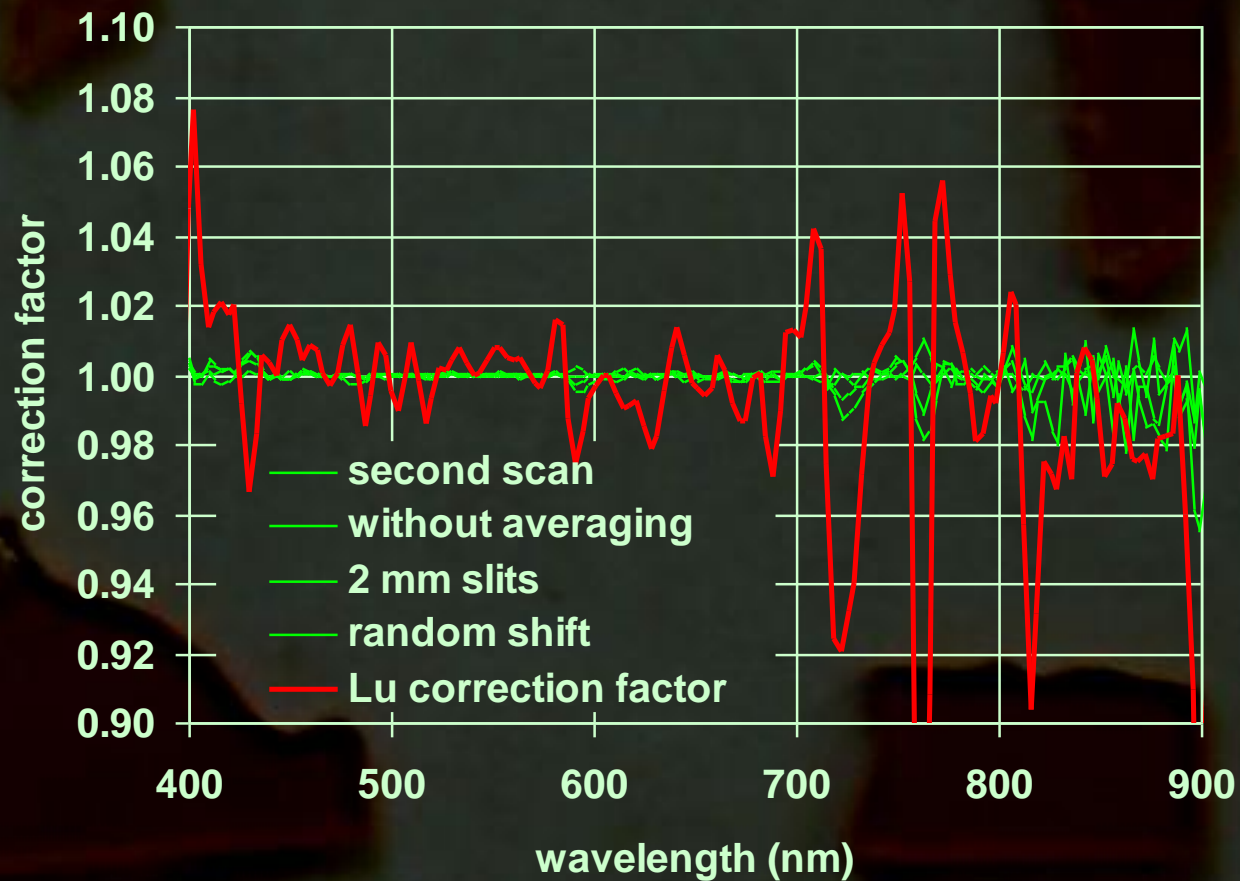
Straylight correction of the laser line



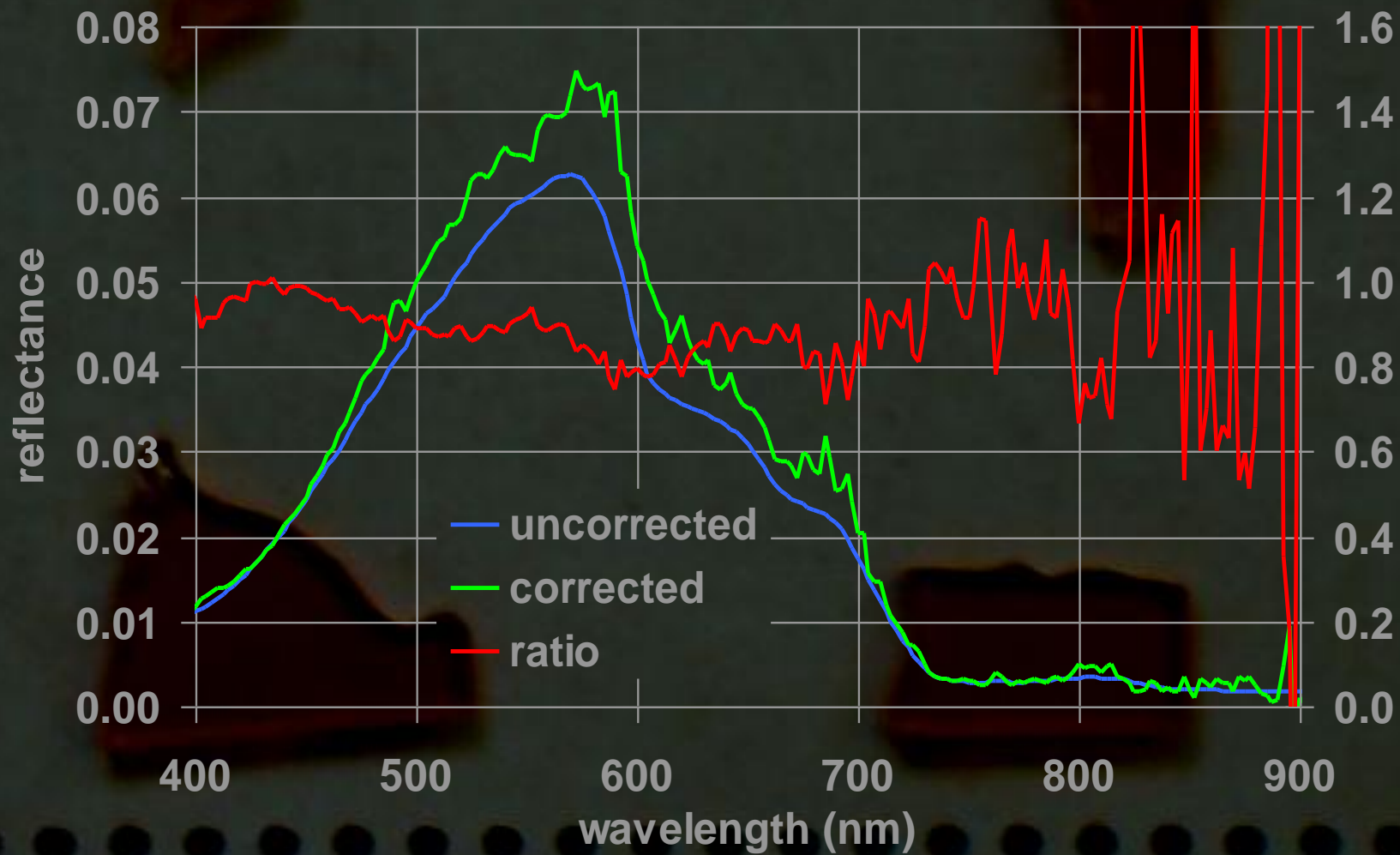
Straylight correction: Kostkowski vs Slaper



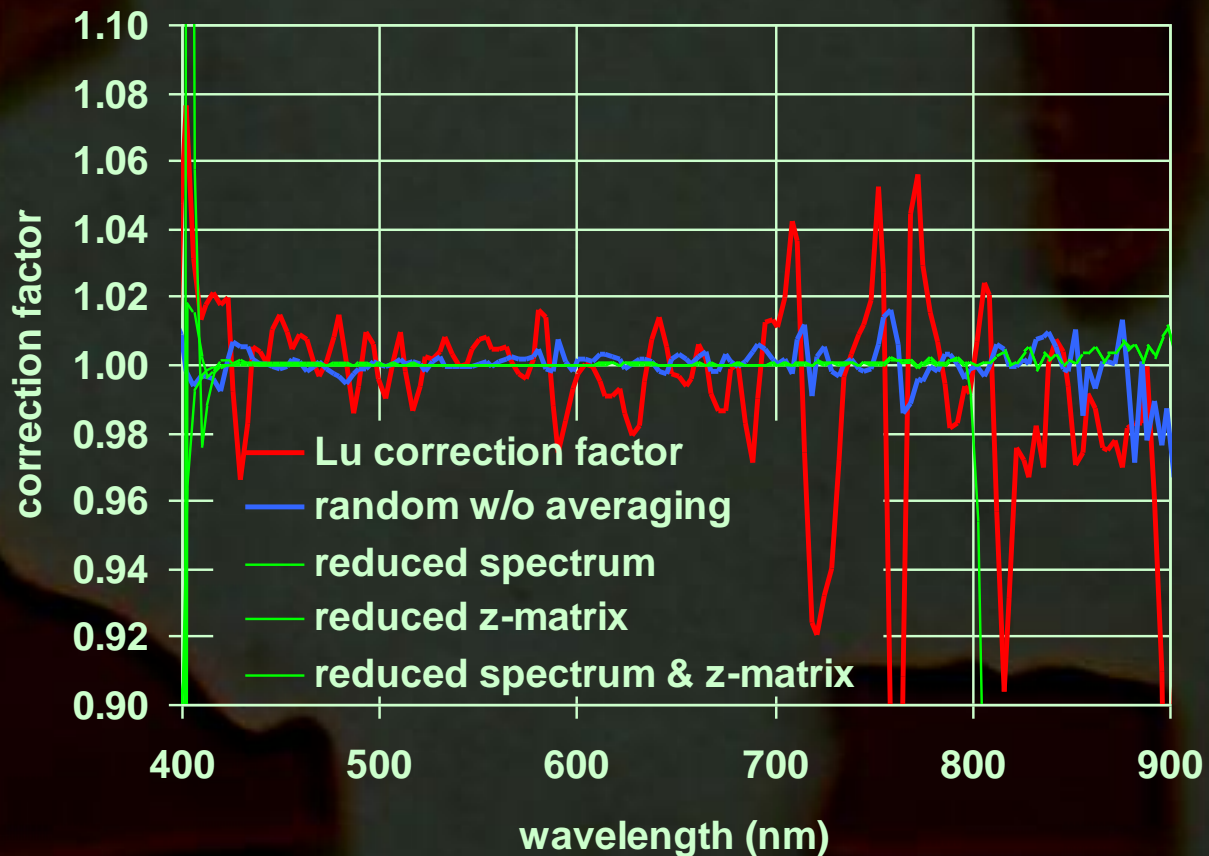
Stability of the straylight removal algorithm I



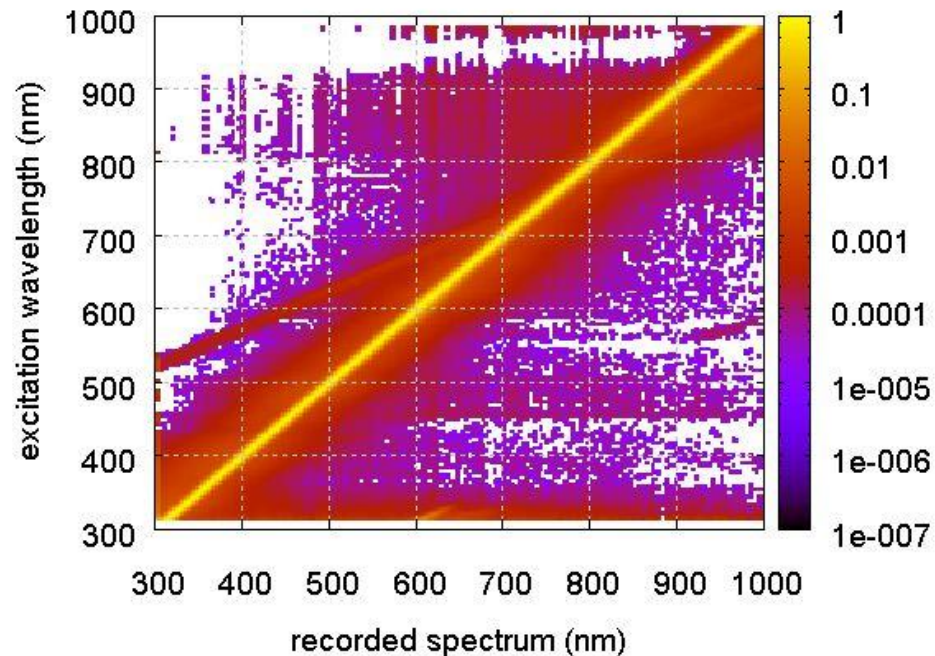
Previous results



Stability of the straylight removal algorithm II

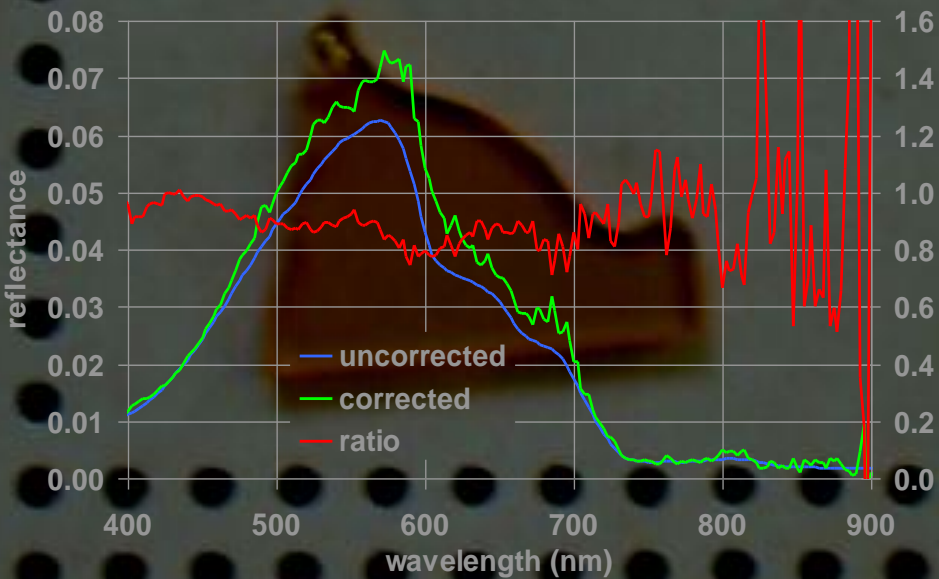


Conclusions



before...

...after



Next steps



radiometric linearity

wavelength scale

z-matrix stability

validation with filter measurements

uncertainty analysis

maturing the setup

independent validation (tunable lasers)

