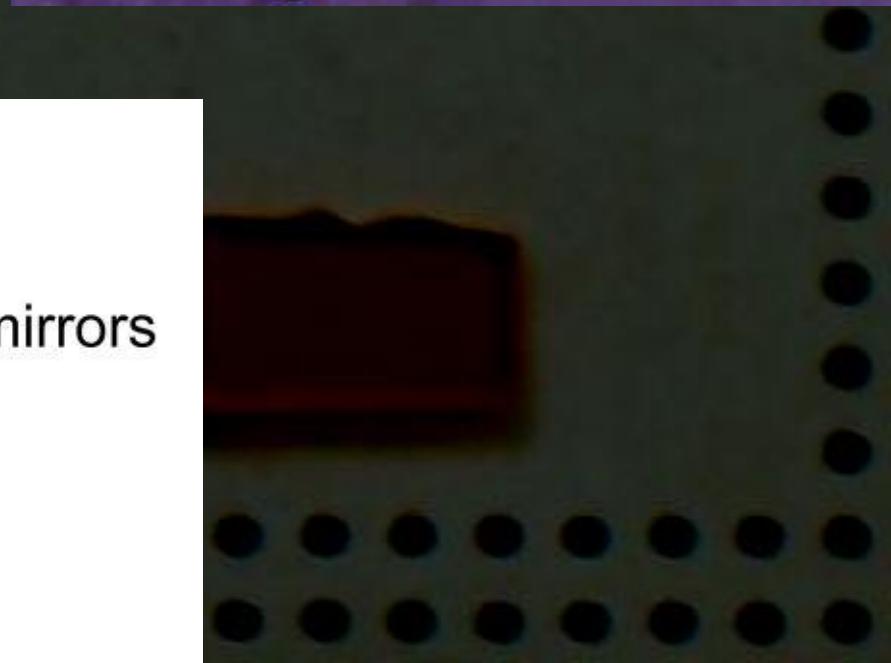
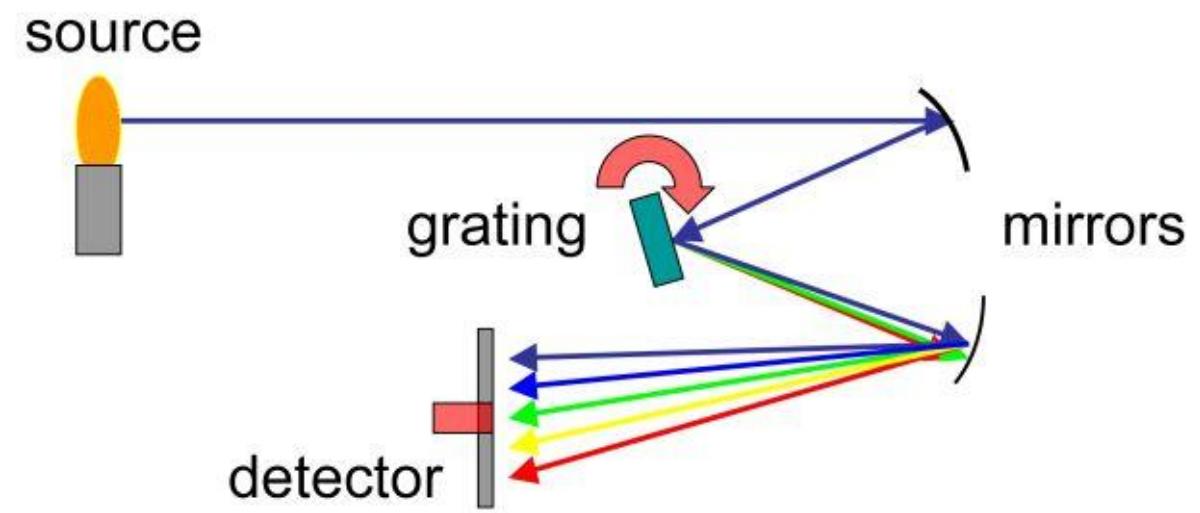


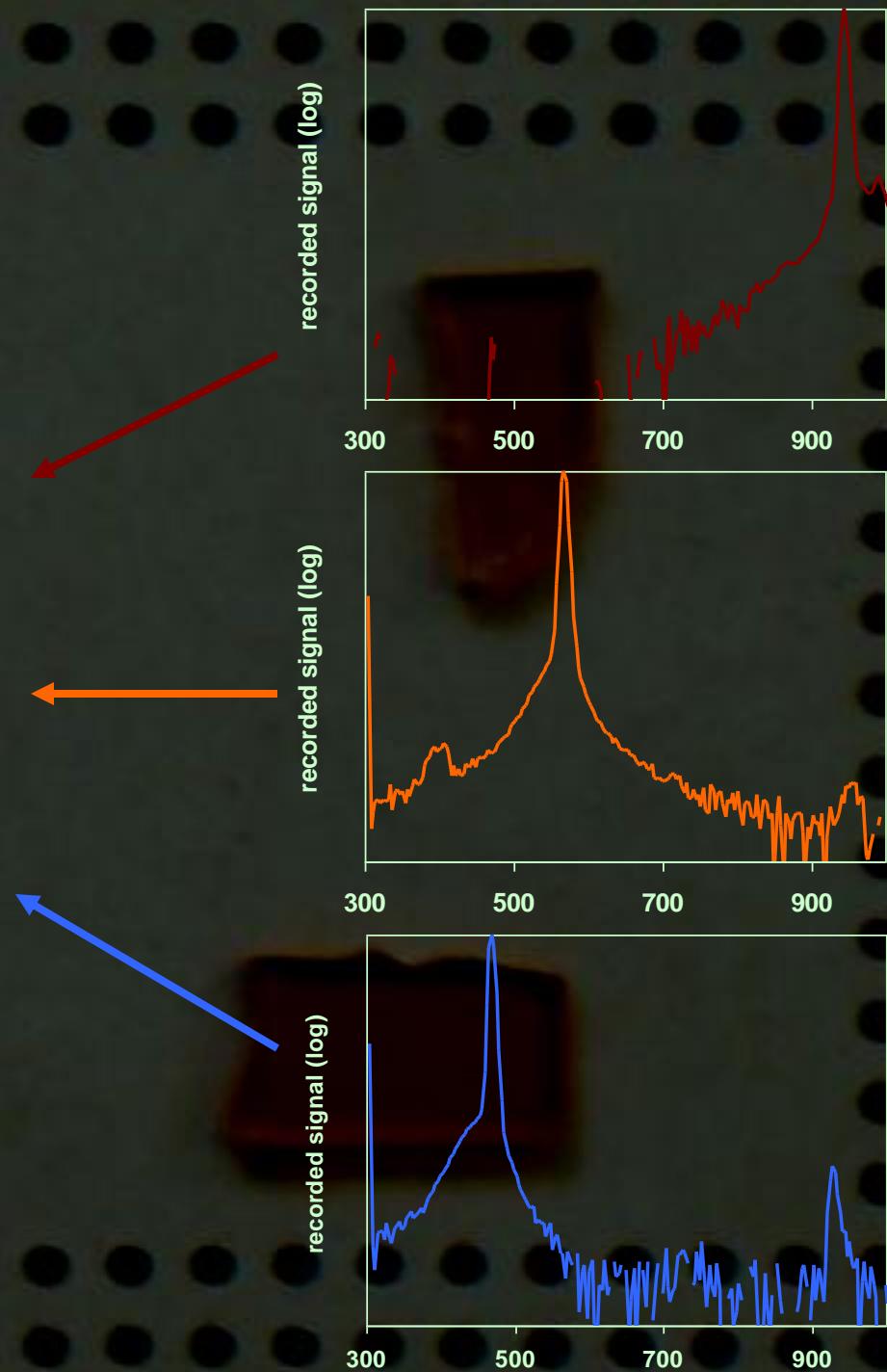
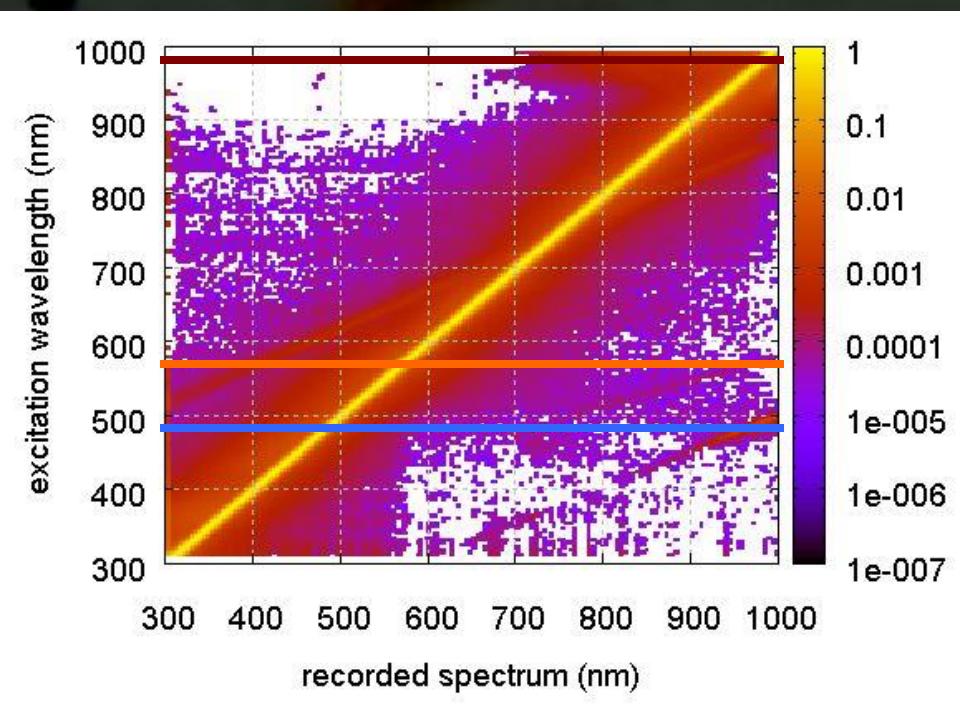
Straylight correction for TriOS RAMSES spectroradiometers

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

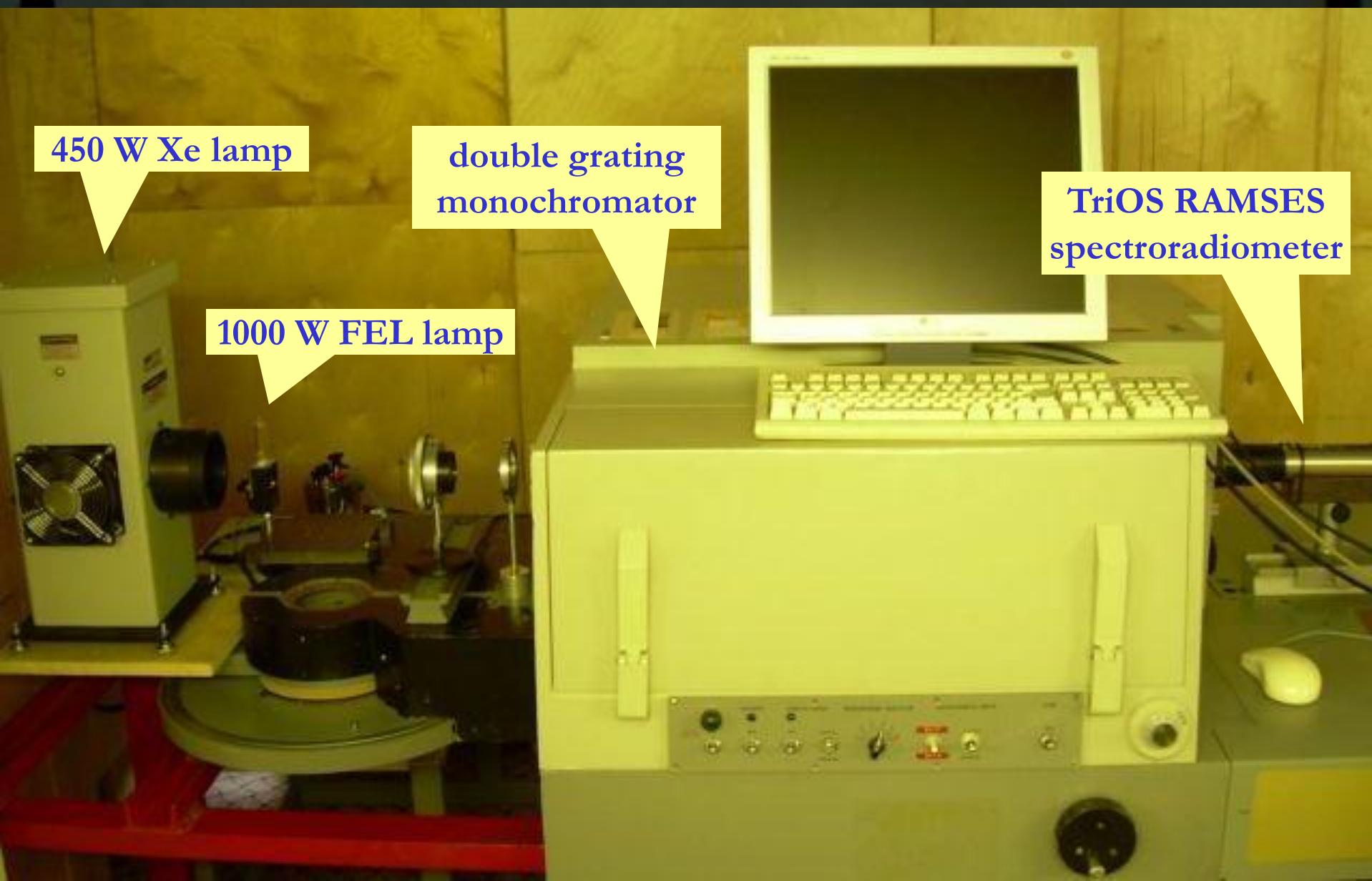
Straylight: the problem



Slit-scattering function



Measurement setup



Data processing

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 Klacempf
Target OS: Win32 for i386
Compiling deconv2.pp
deconv2.pp(126,5) Note: Local variable "ri" is assigned but never used
deconv2.pp(275,5) Note: Local variable "ri" 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>
```

program deconv2;

```
($APPTYPE CONSOLE)
uses Windows, SysUtils;

type massiiv = array[0..255] of double;
pmassiiv = ^massiiv;
riist = record
  name: string[15];
  ini_file, back_file, cal_file: string;
  dark_start, dark_stop: longint;
  c0s, cis, c2s, c3s, c4s, exp: word;
end;
```

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/>
```

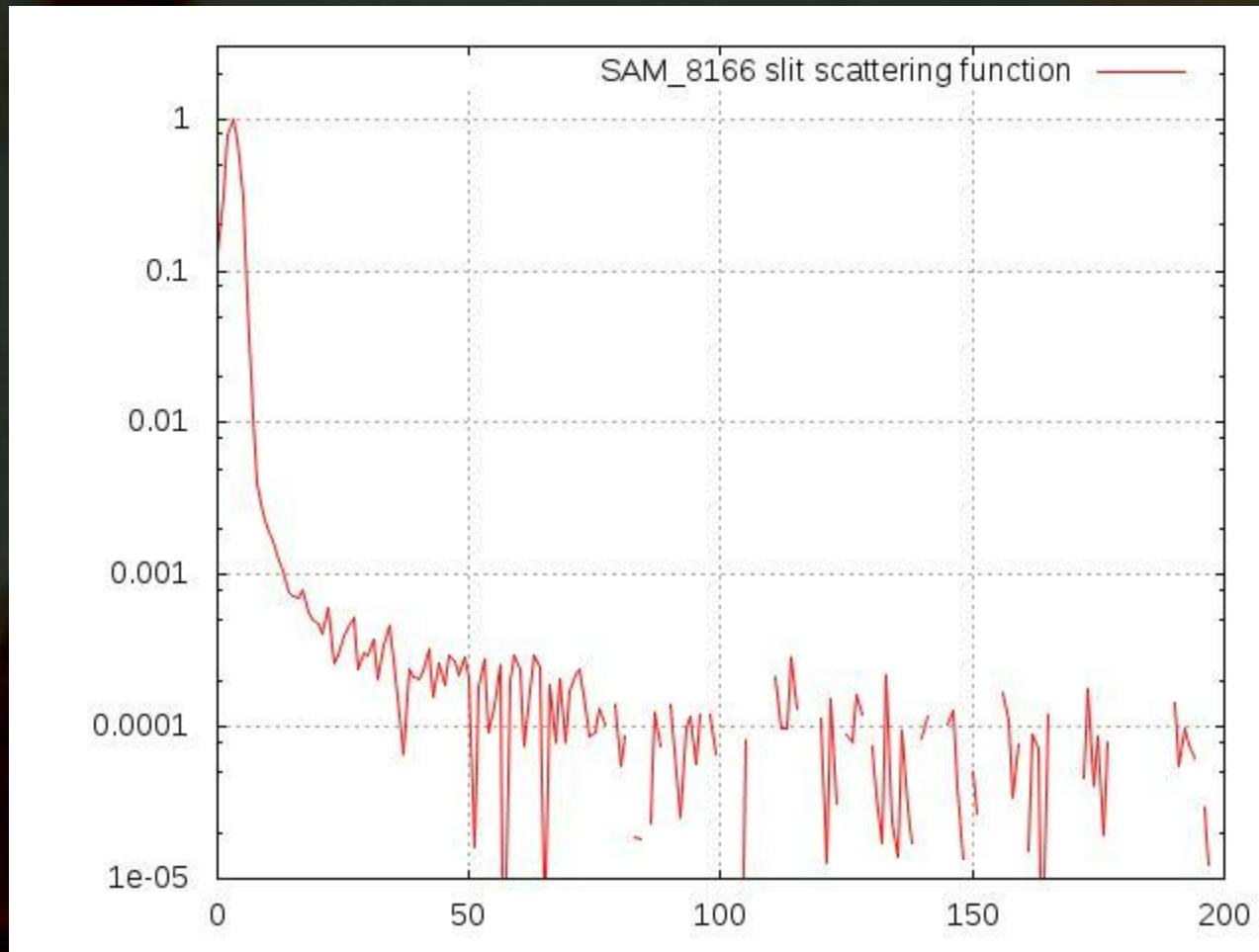
var plot

```
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>
```

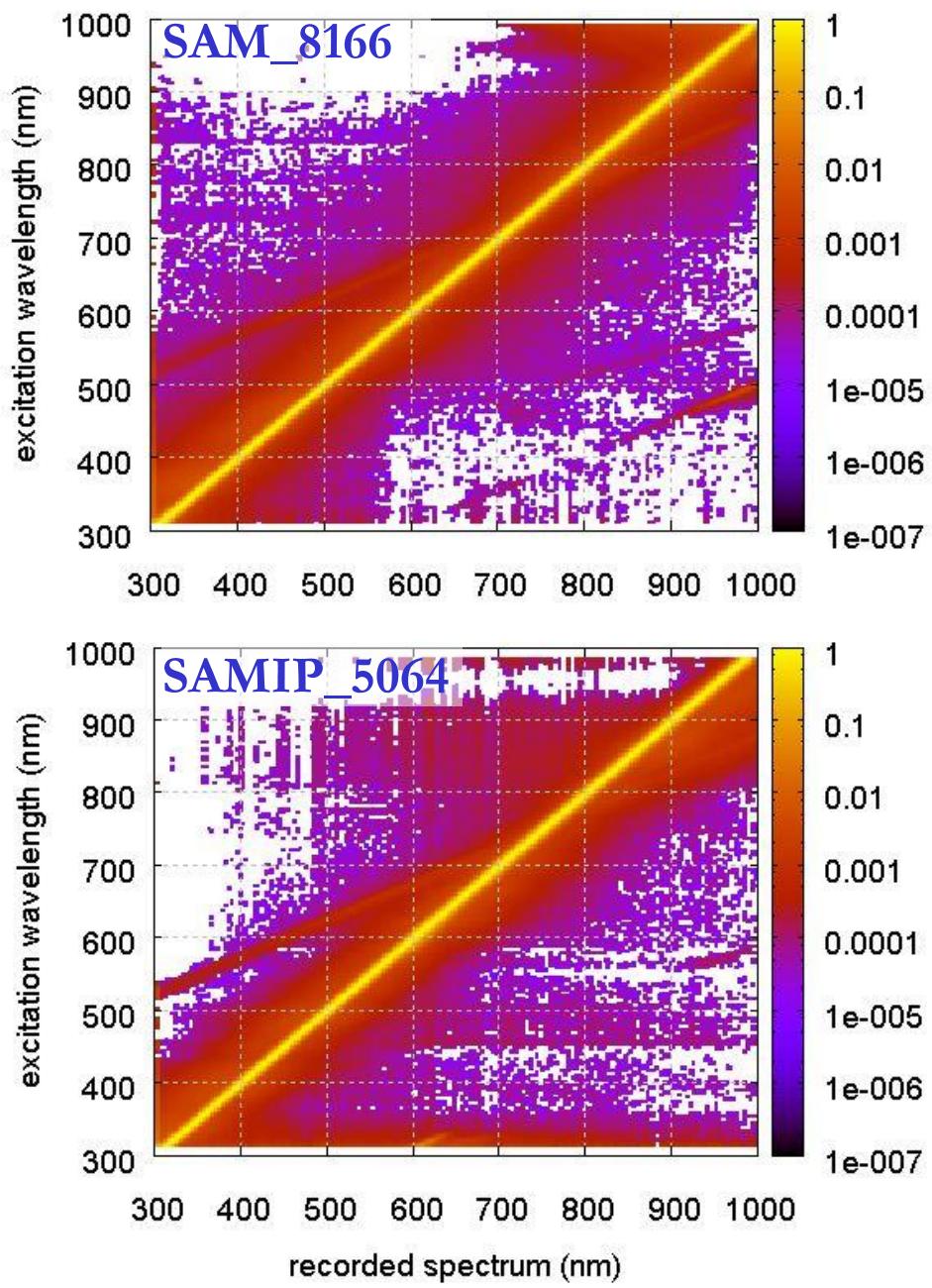
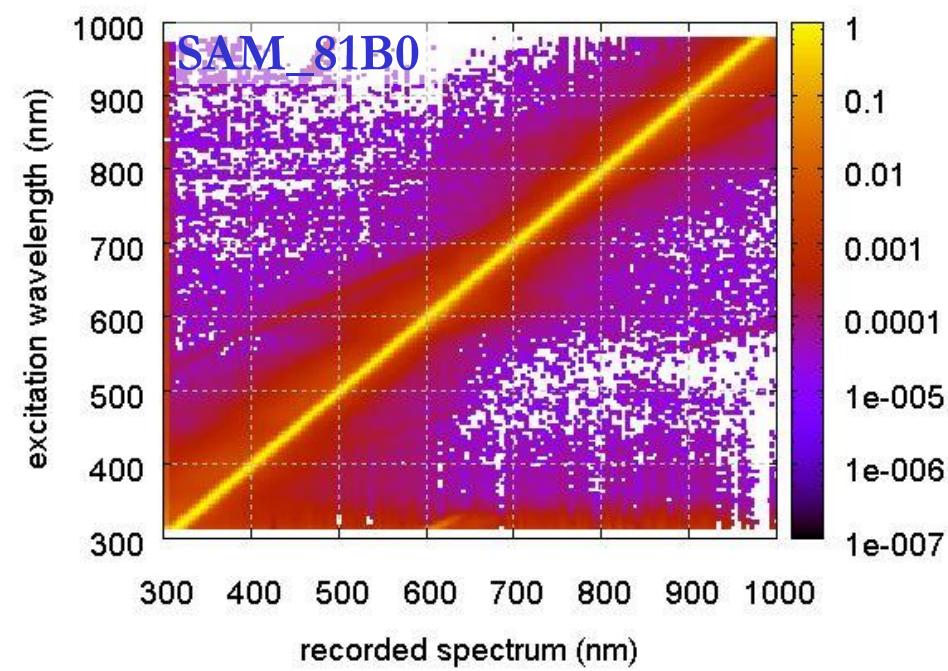
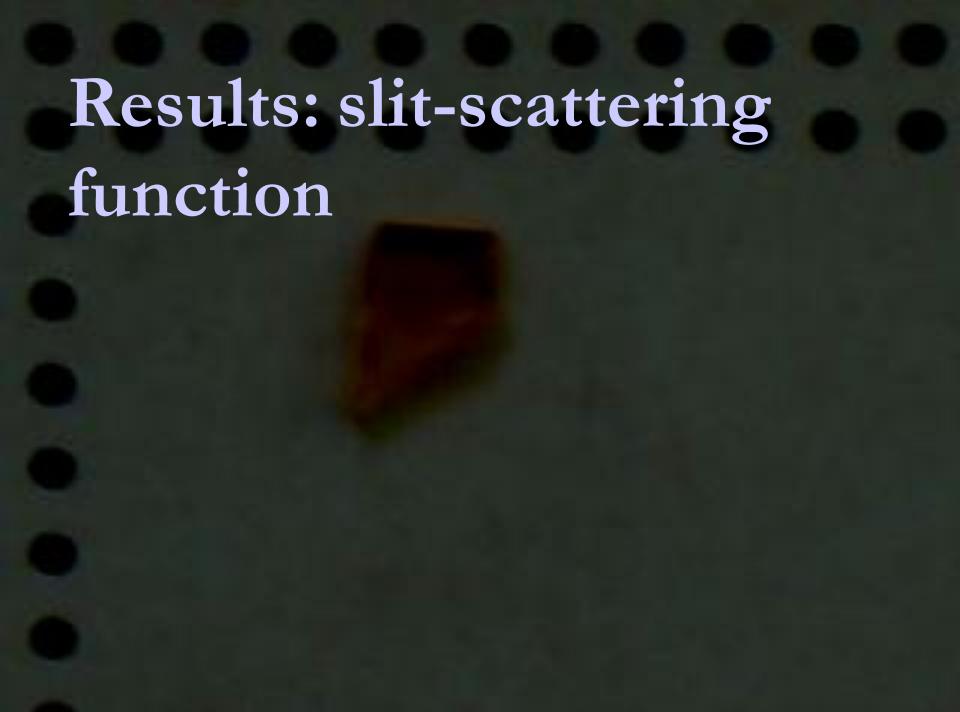
z_SAM_8166.dat – WordPad

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0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.4029894	0.7545688	1.0000000	0.7563423	0.320355	
0.1277440	0.3074792	0.7695075	1.0000000	0.74031E	
0.0697693	0.0464787	0.2914857	0.7543247	1.000000	
0.0538683	0.0077418	0.0424788	0.2829165	0.745013	
0.0057235	0.0072413	0.0406635	0.281275		
0.0047911	0.0052399	0.0067562	0.037652		
0.0039666	0.0043428	0.0048639	0.00626C		
0.0033098	0.0036145	0.0039750	0.00446E		
0.0028343	0.0031341	0.0033431	0.003642		
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0.0022337	0.0025681	0.0027880	0.002963		
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0.0017152	0.0022681	0.0024380	0.002512		
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0.0009893	0.0018481	0.0019480	0.001812		
0.0008856	0.0017881	0.0018780	0.001712		
0.0007819	0.0017281	0.0018080	0.001612		
0.0006782	0.0016681	0.0017380	0.001512		
0.0005745	0.0016081	0.0016680	0.001412		
0.0004708	0.0015481	0.0015980	0.001312		
0.0003671	0.0014881	0.0015280	0.001212		
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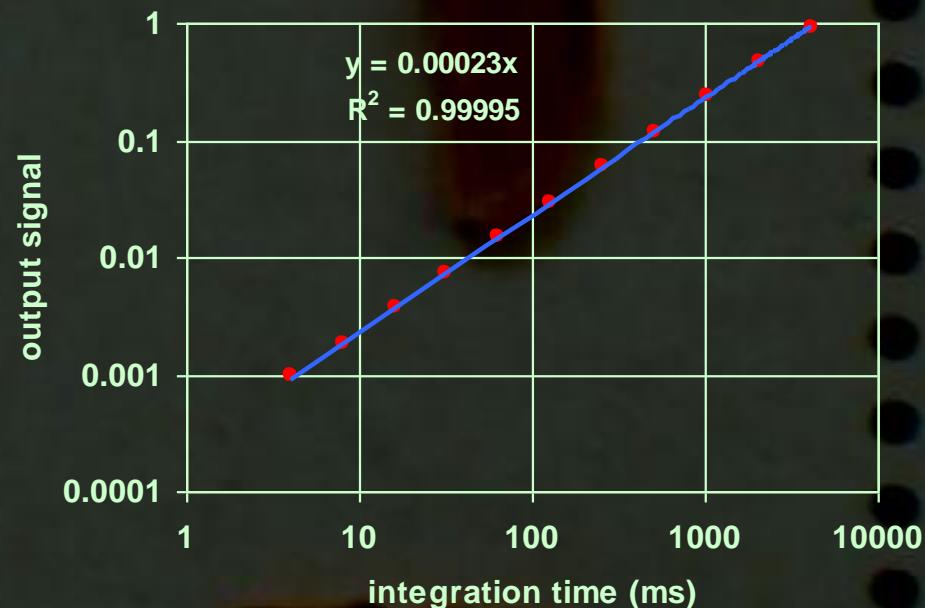
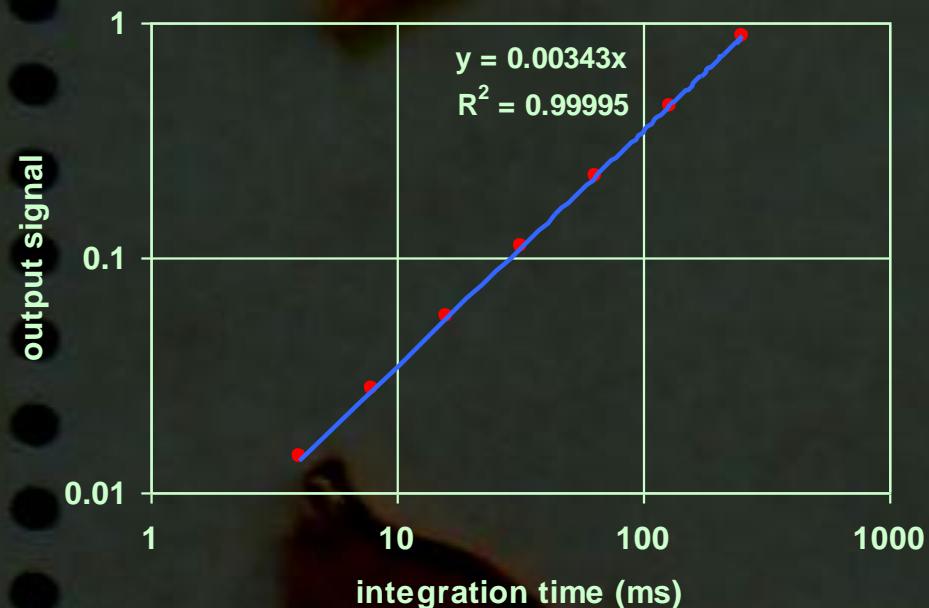
RAMSES ARC SAM_8166 slit-scattering function



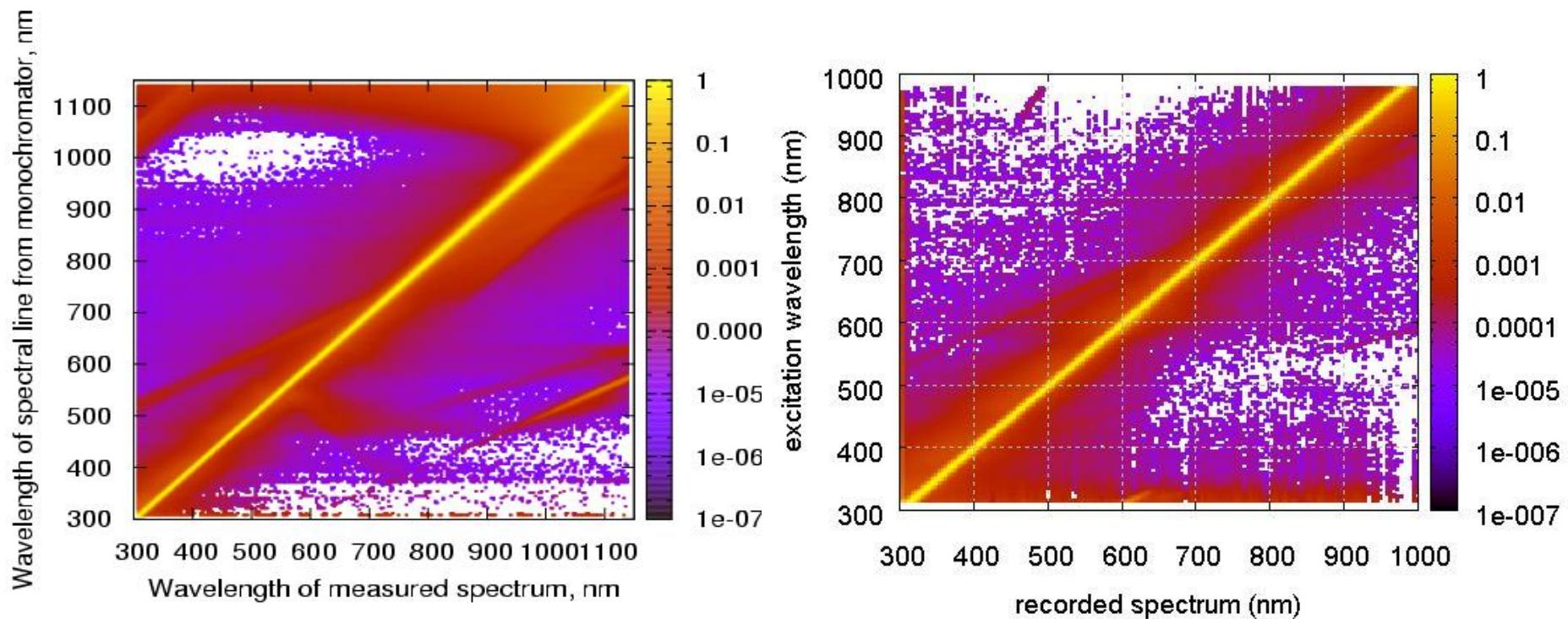
Results: slit-scattering function



Radiometric linearity

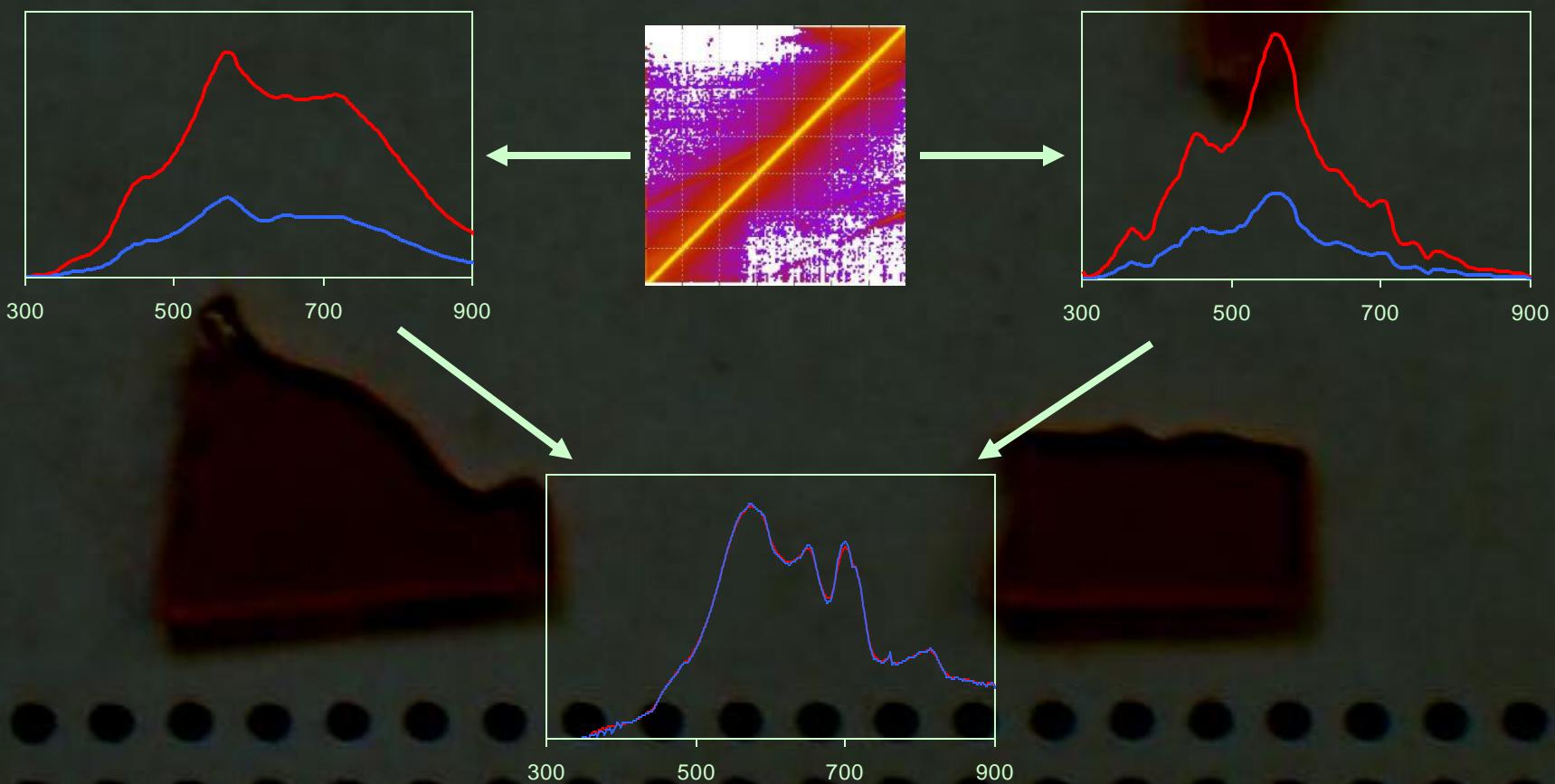


Slit-scattering function: comparison to Zeiss MMS1

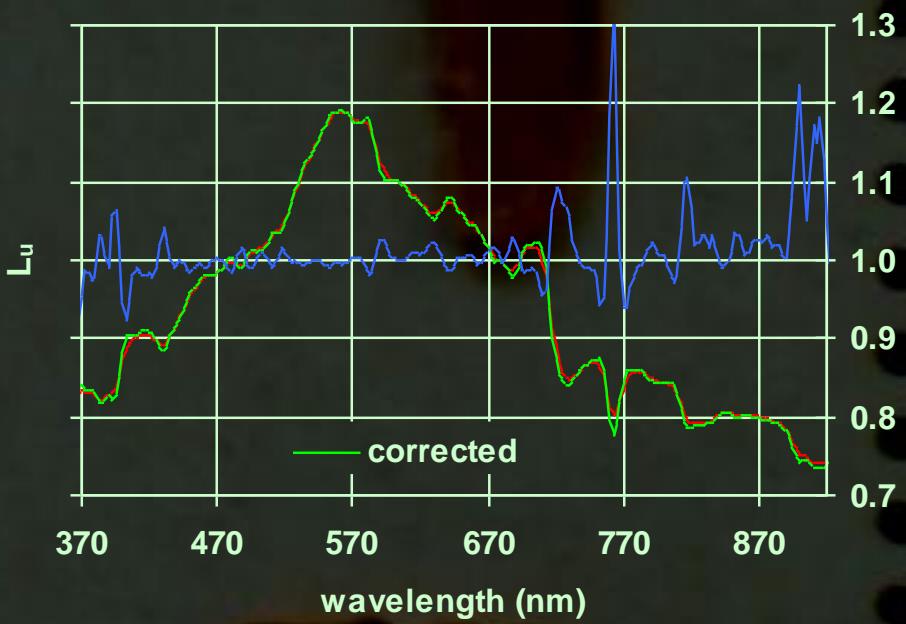
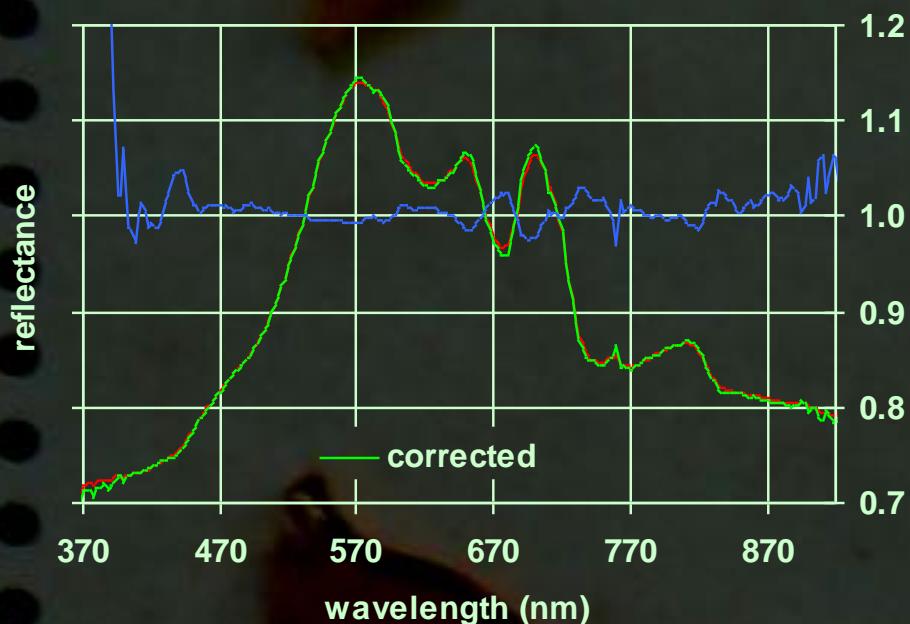


Straylight correction

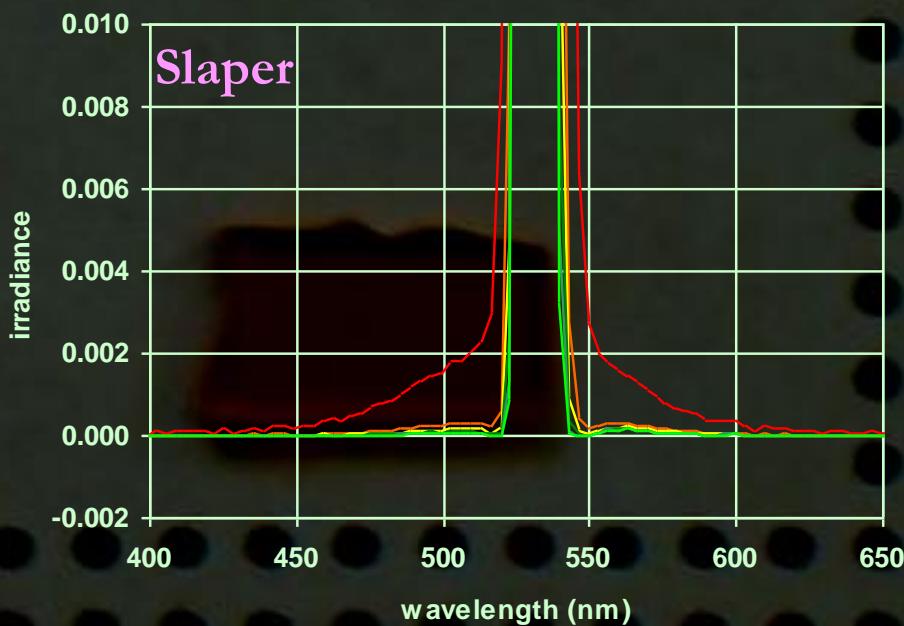
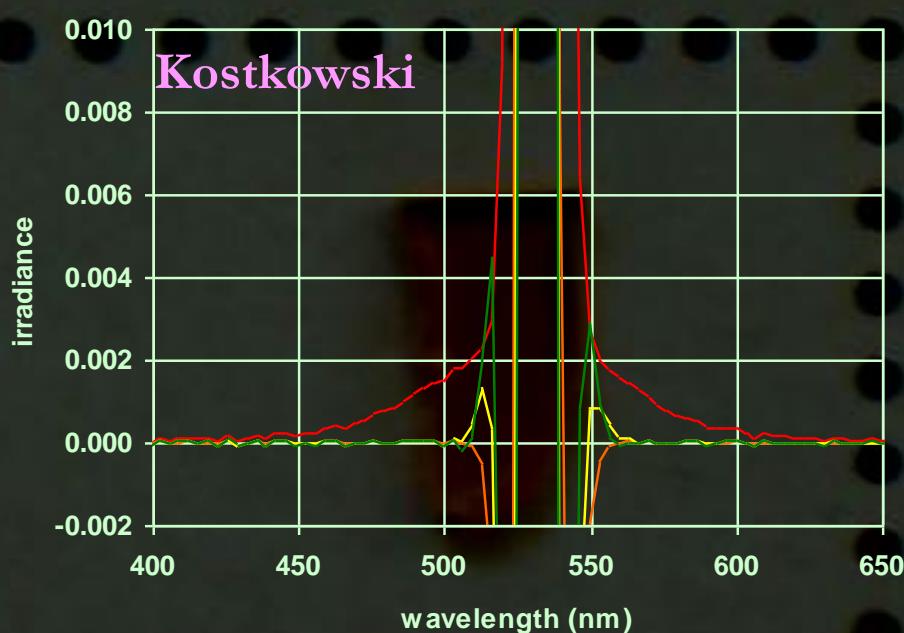
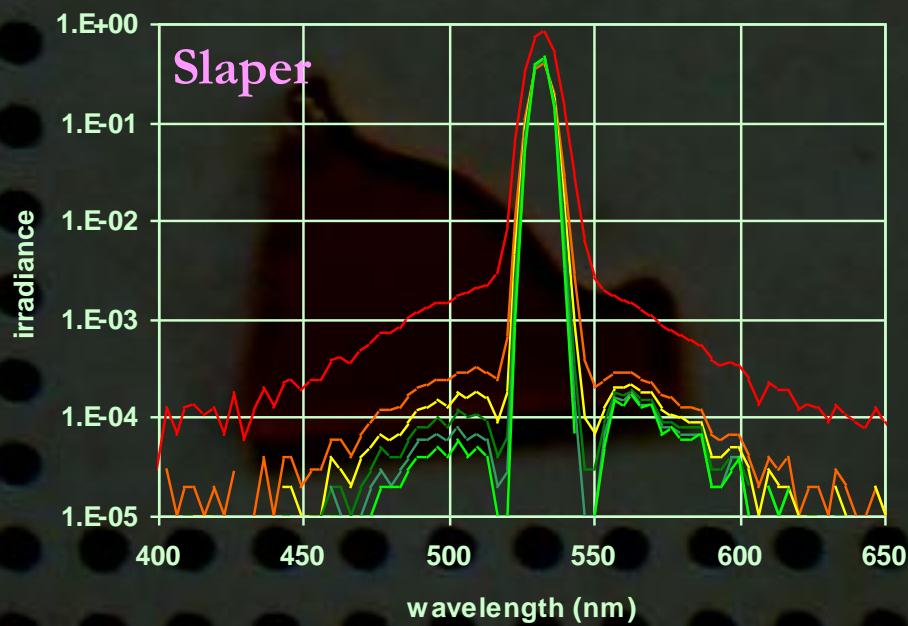
- a) [Kostowski HJ: Reliable Spectroradiometry]
- b) [Slaper H et al.: Comparing ground-level spectrally resolved solar UV measurements using various instruments: A technique resolving effects of wavelength shift and slit width]



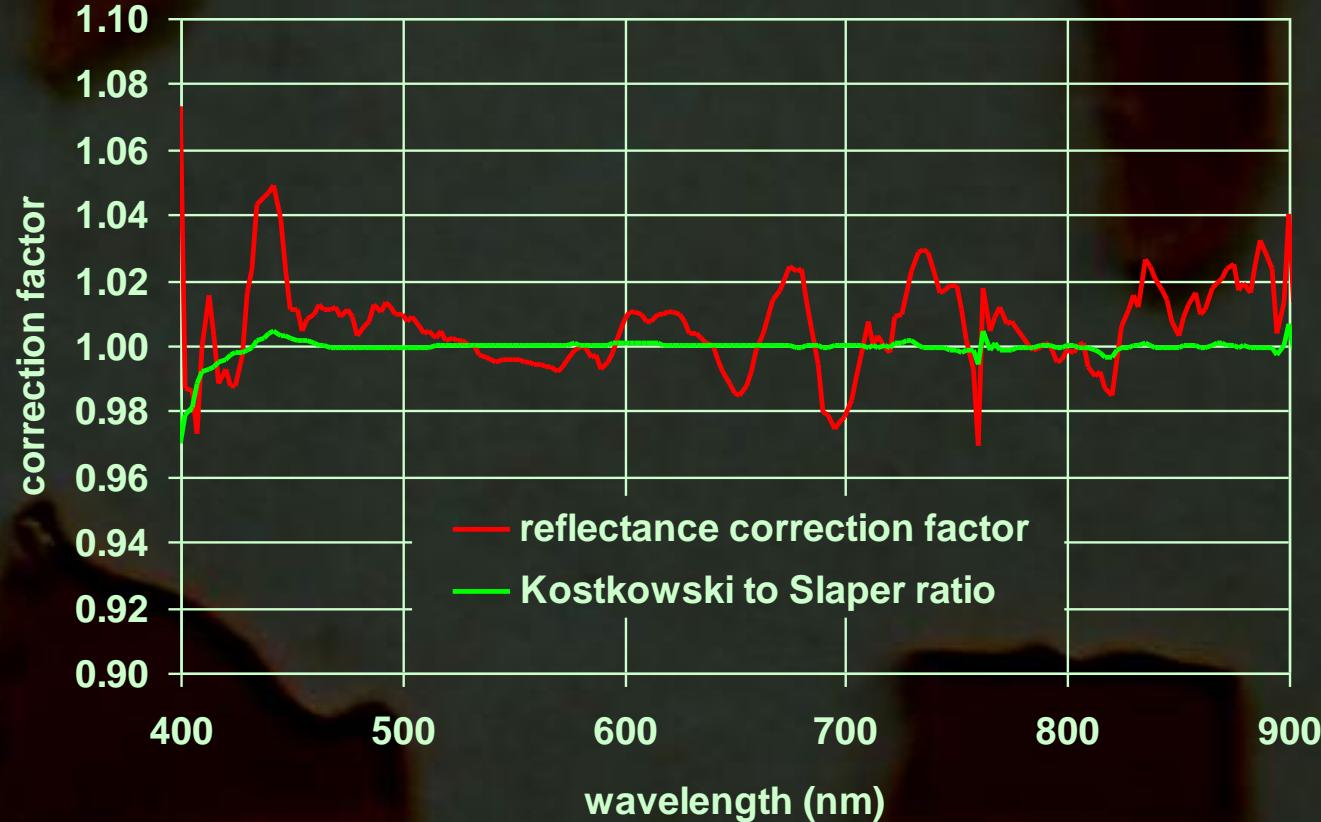
Straylight correction



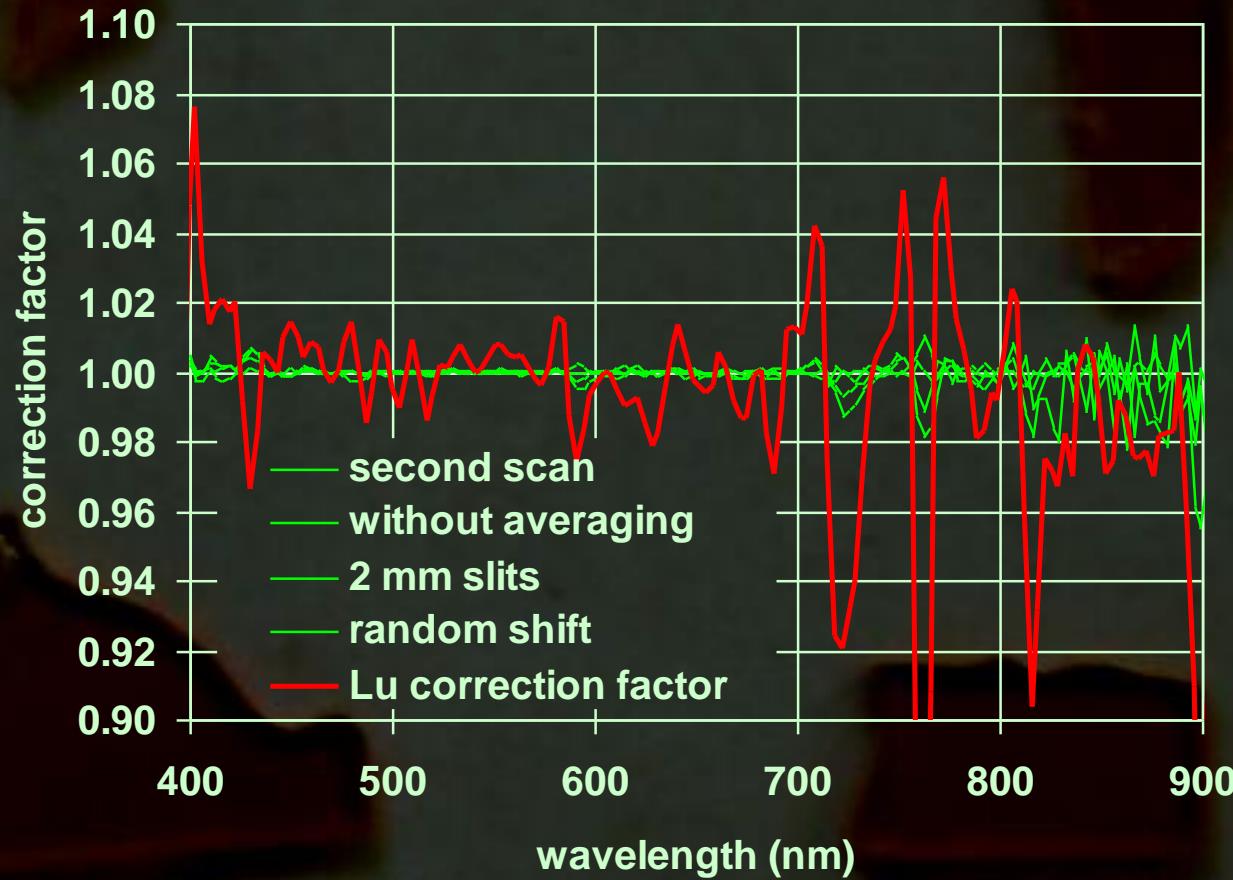
Straylight correction of the laser line



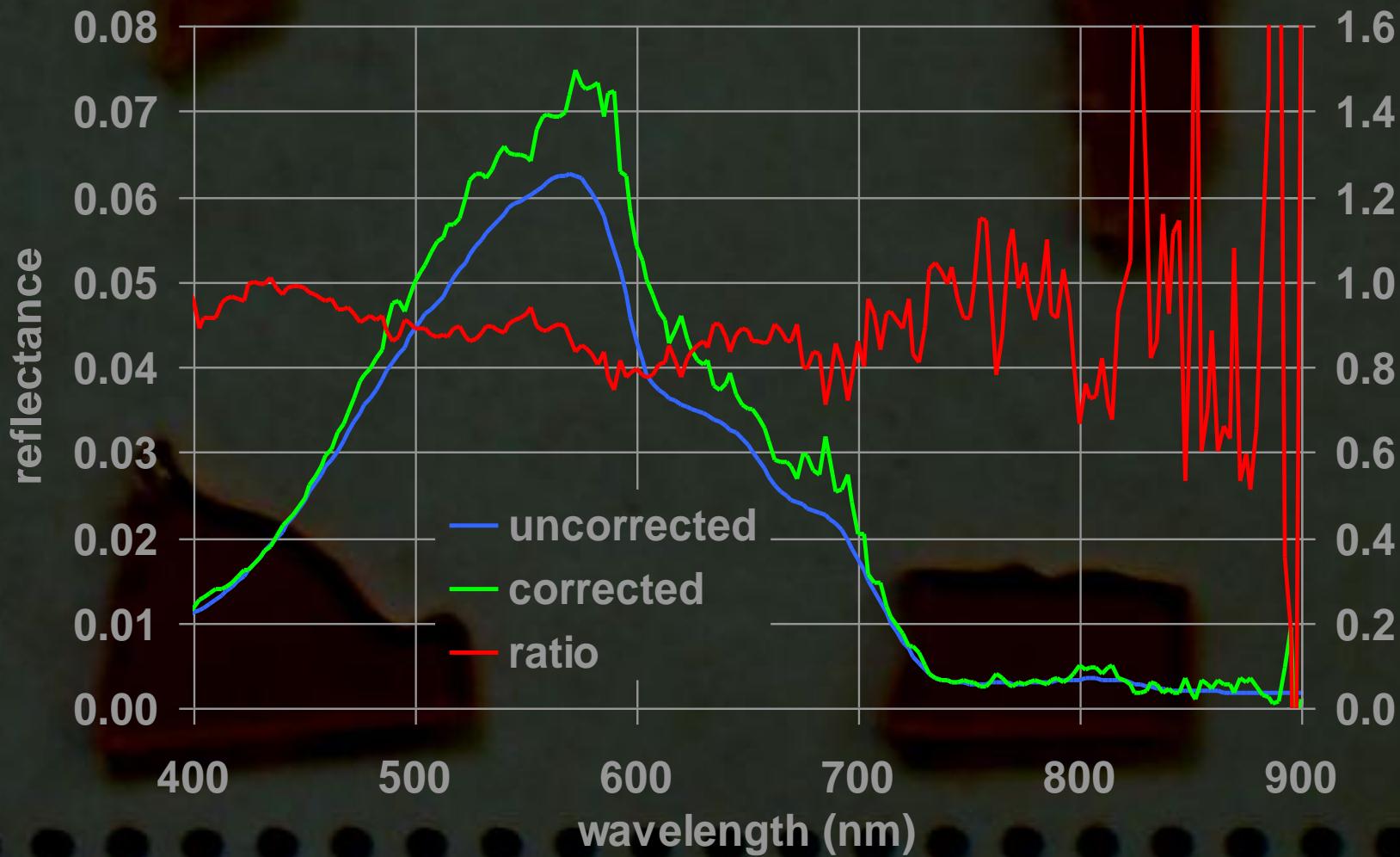
Straylight correction: Kostkowski vs Slaper



Stability of the straylight removal algorithm I

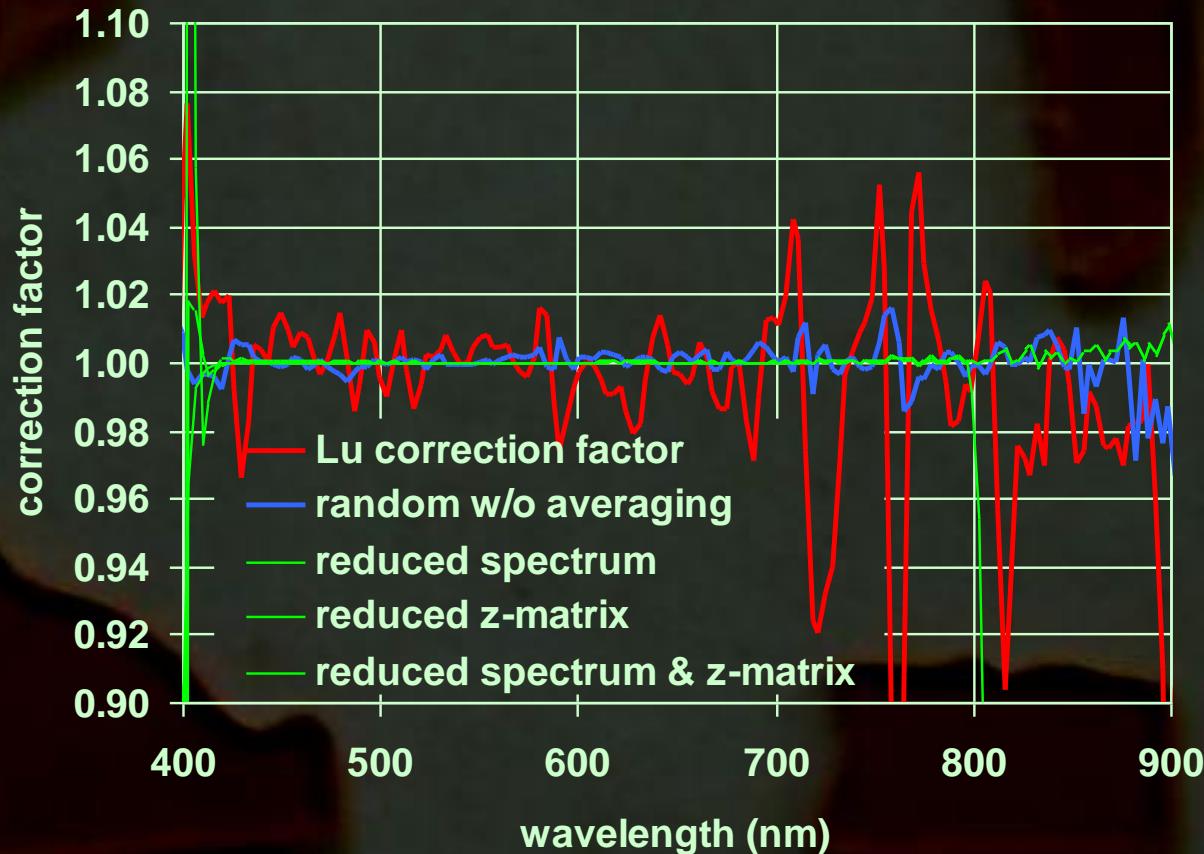


Previous results

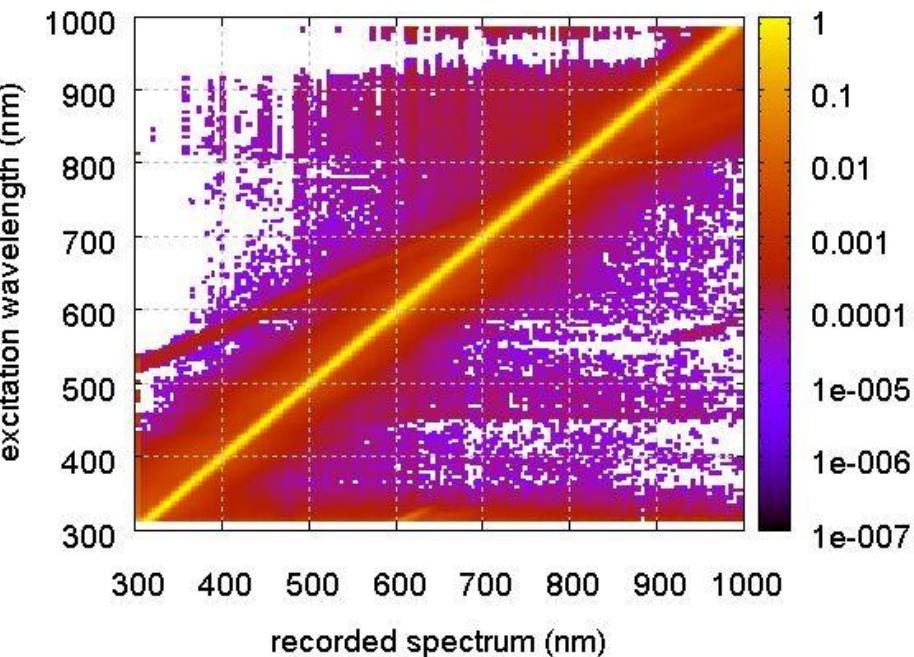


Stability of the straylight removal algorithm

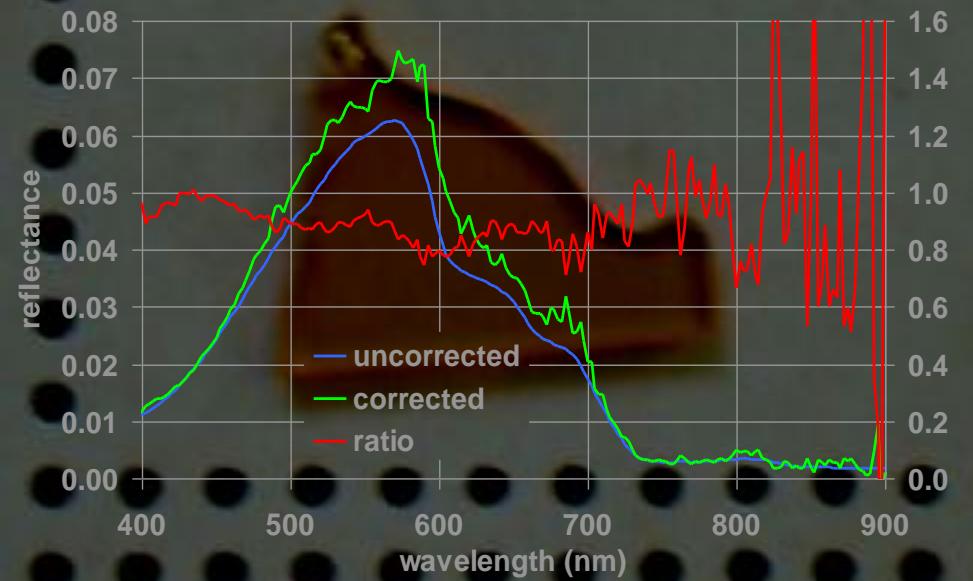
II



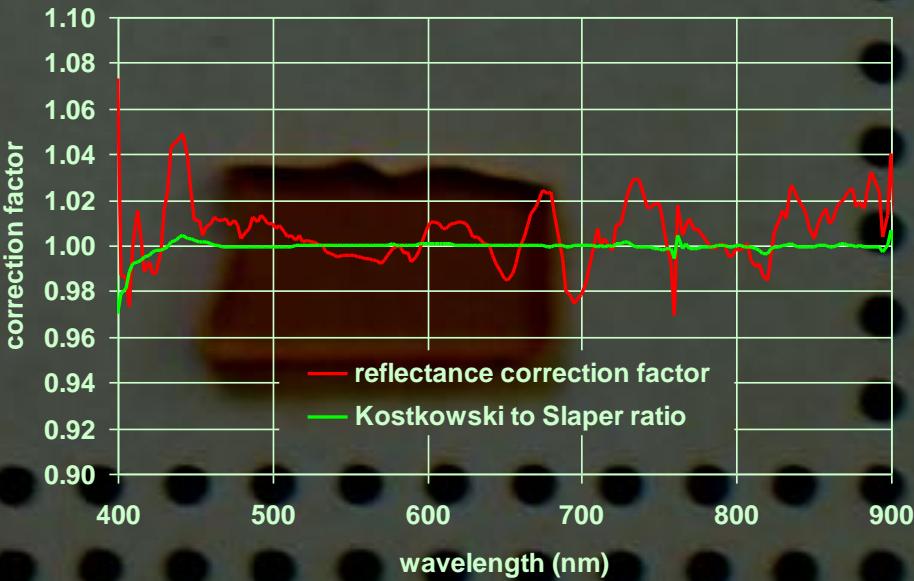
Conclusions



before...



...after



Next steps

A scenic view of a red wooden house with a balcony overlooking a body of water under a cloudy sky.

radiometric linearity
wavelength scale
z-matrix stability
validation with filter measurements
uncertainty analysis
maturing the setup
independent validation (tunable lasers)

