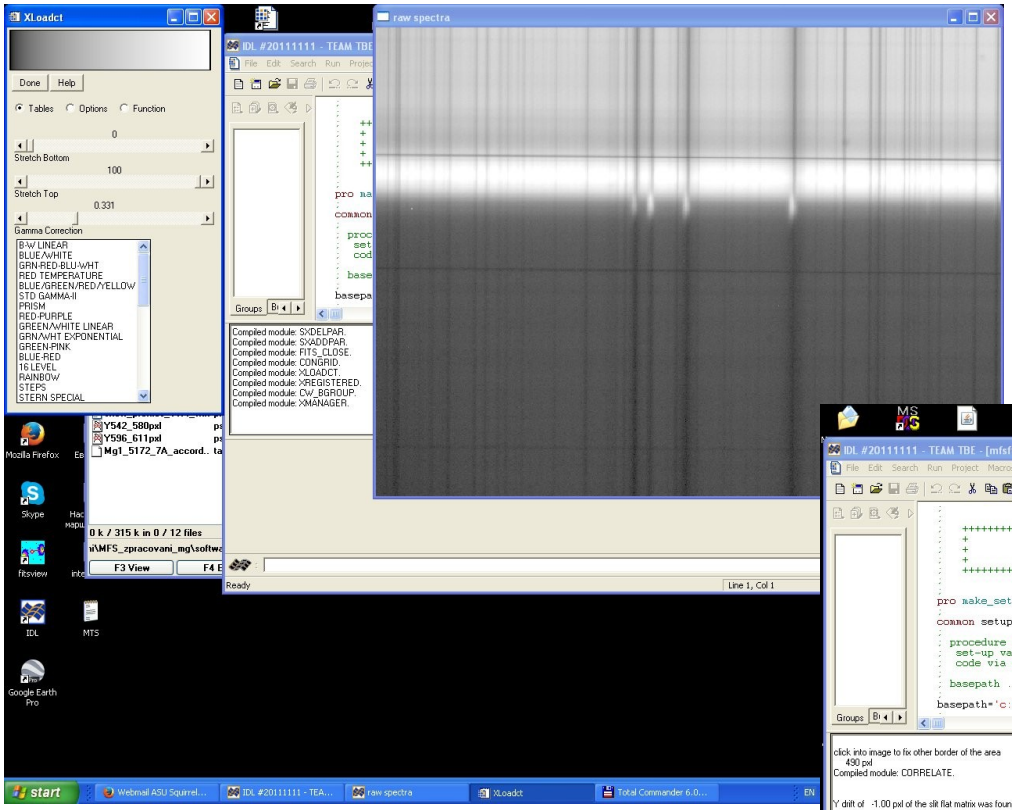
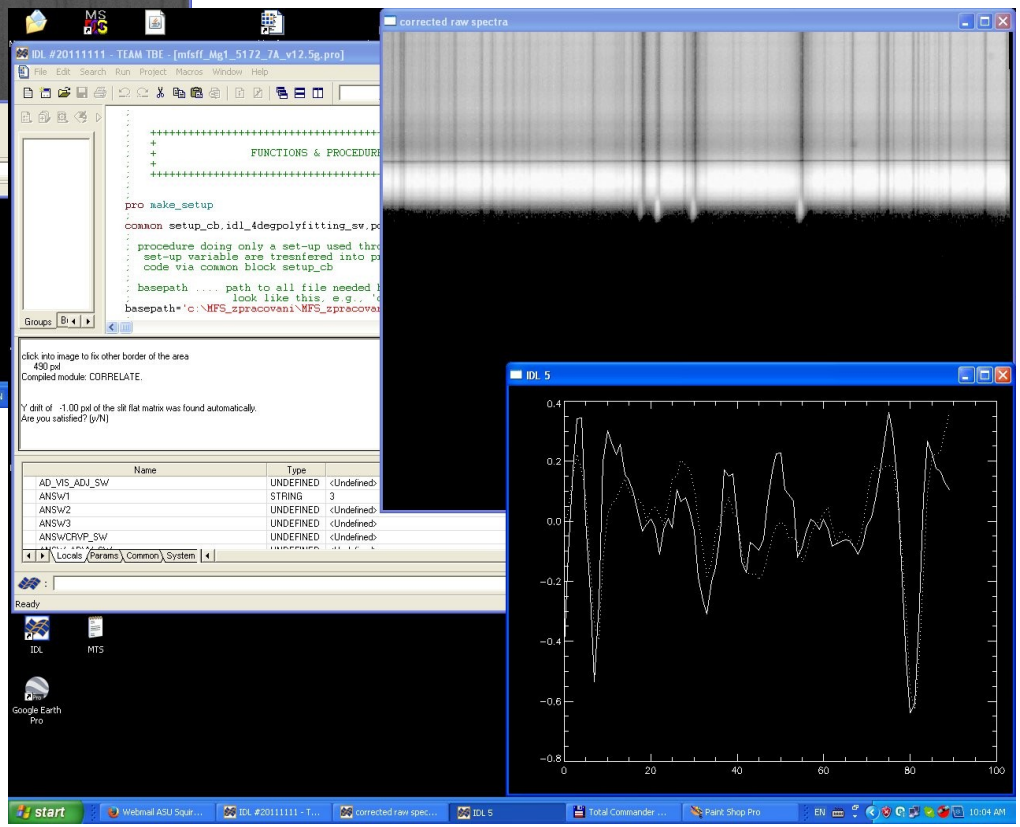
Step-by-step návod na redukci dat pozorování spektrálních čar **Mg I na MFS**

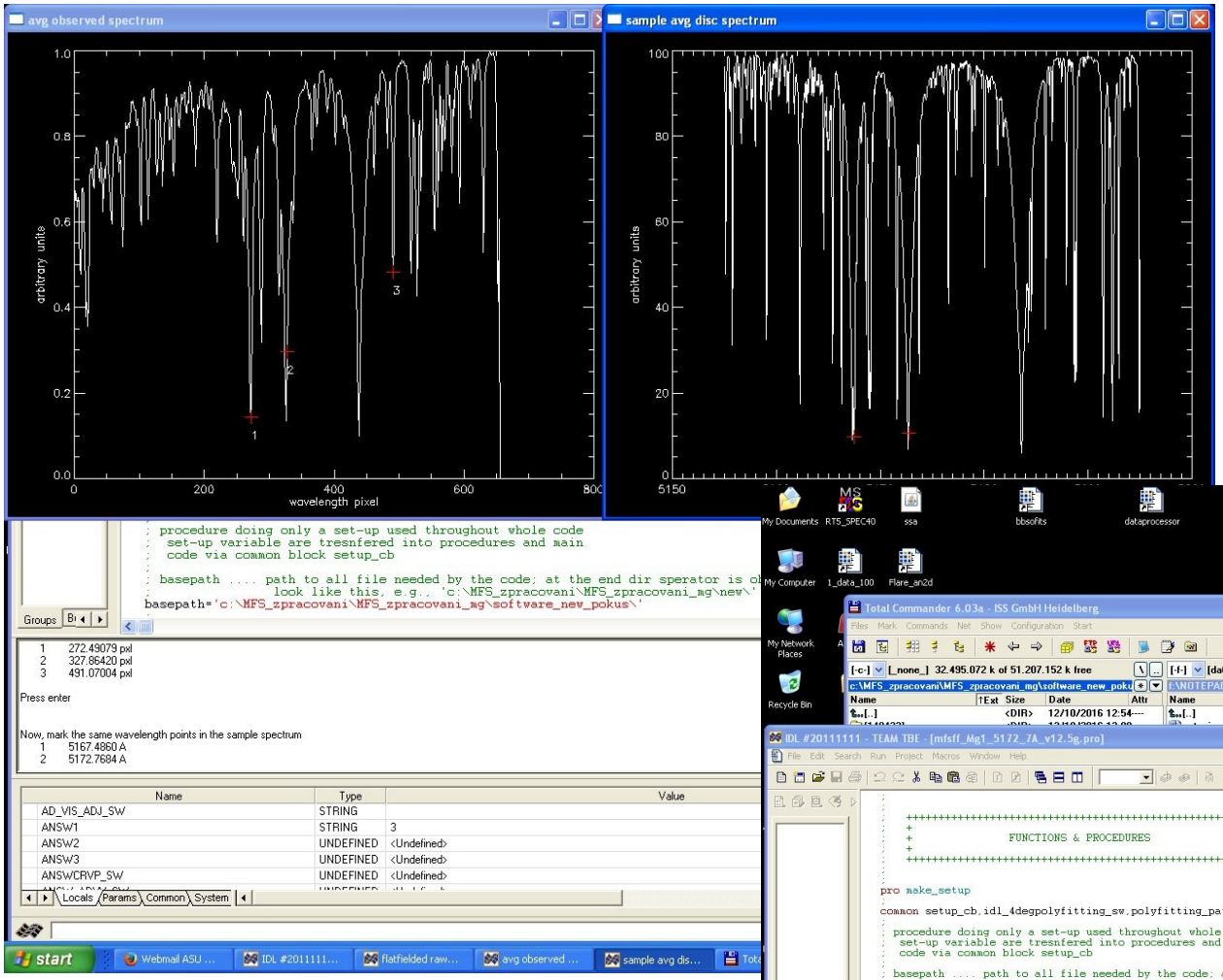
(Y. Kuprjakov)



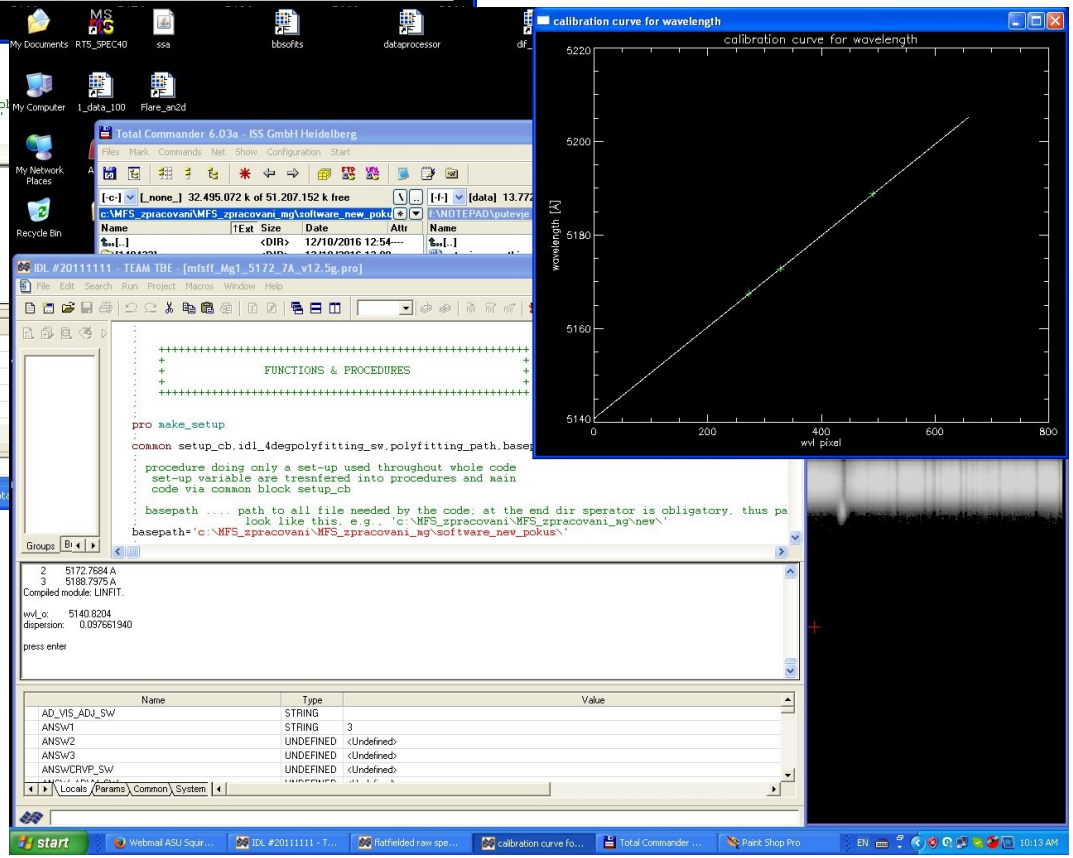
1



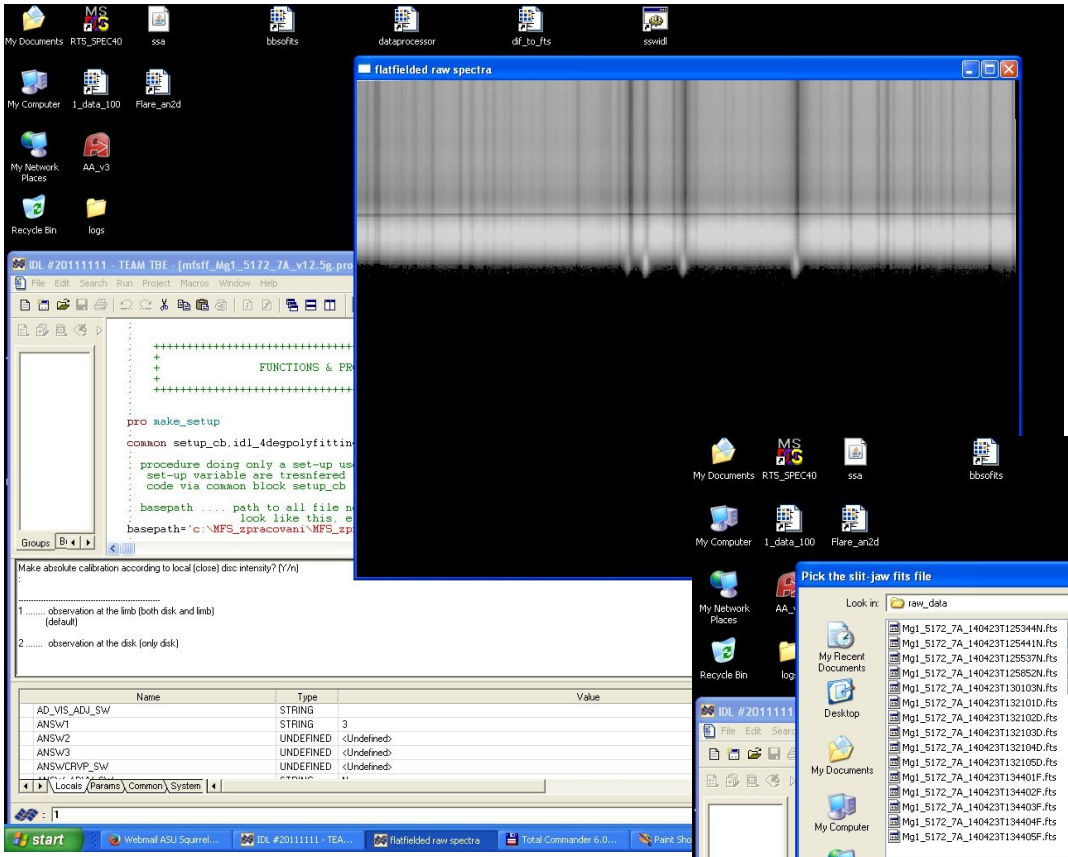
2


avg observed spectrum
arbitrary units
wavelength pixel
sample avg disc spectrum
arbitrary units
procedure doing only a set-up used throughout whole code
set-up variable are tresnfered into procedures and main
code via common block setup_cb
basepath ..... path to all file needed by the code; at the end dir sperator is o
look like this, e.g., 'c:\MFS_zpracovani\MFS_zpracovani_mg\new\'
basepath='c:\MFS_zpracovani\MFS_zpracovani_mg\software_new_pokus\'
1 272.49079 pxl
2 327.86420 pxl
3 491.07004 pxl
Press enter
Now, mark the same wavelength points in the sample spectrum
1 5167.4860 A
2 5172.7684 A
Name Type Value
AD_VIS_ADJ_SW STRING
ANSW1 STRING 3
ANSW2 UNDEFINED <Undefined>
ANSW3 UNDEFINED <Undefined>
ANSWCRVP_SW UNDEFINED <Undefined>
Locals Params Common System
start

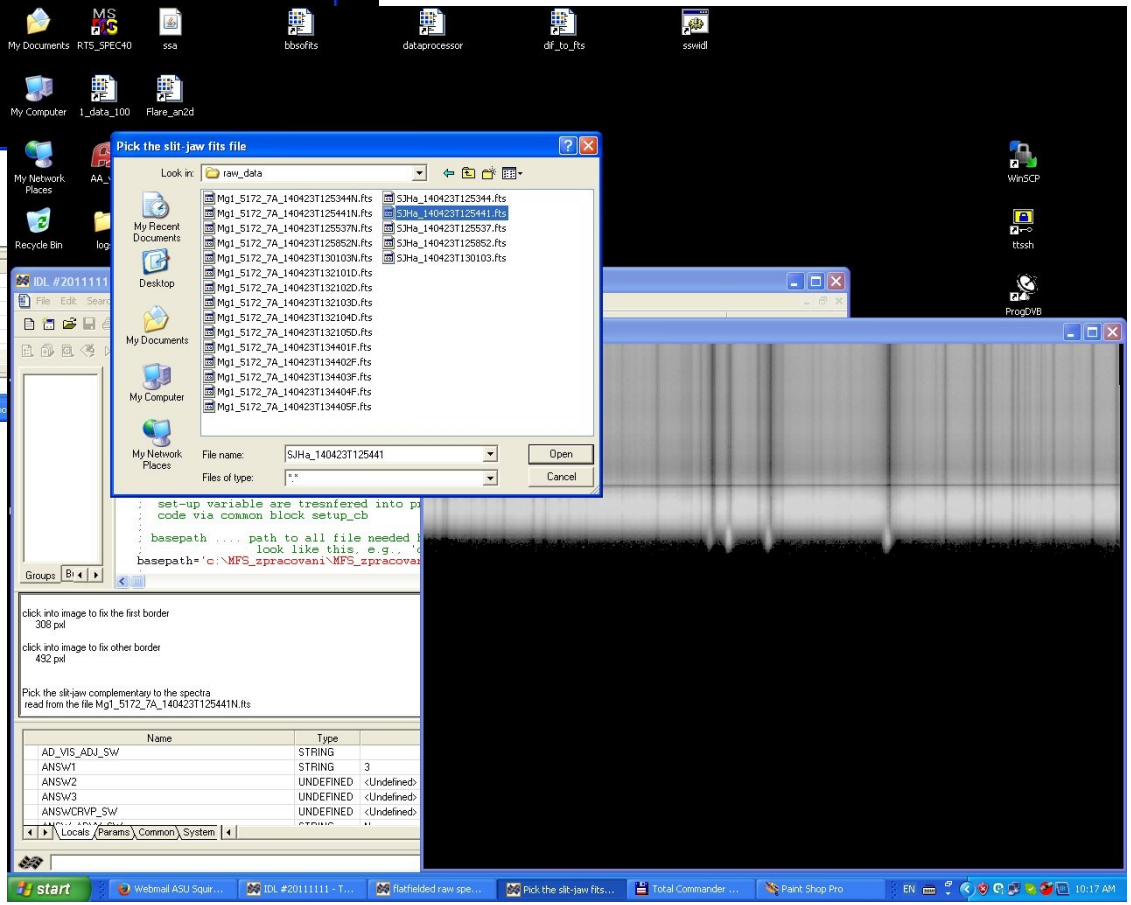
3


calibration curve for wavelength
wavelength [A]
wvl pixel
Total Commander 6.03a - ISS GmbH Heidelberg
IDL #20111111 - TEAM TBE - [mfsff_Mg1_5172_7A_v12.5g.pro]
FUNCTIONS & PROCEDURES
pro make_setup
common setup_cb,idl_4degpolyfitting_sw,polyfitting_path,basep
procedure doing only a set-up used throughout whole code
set-up variable are tresnfered into procedures and main
code via common block setup_cb
basepath ..... path to all file needed by the code; at the end dir sperator is obligatory, thus pa
look like this, e.g., 'c:\MFS_zpracovani\MFS_zpracovani_mg\new\'
basepath='c:\MFS_zpracovani\MFS_zpracovani_mg\software_new_pokus\'
2 5172.7684 A
3 5188.7975 A
Compiled module: LINFIT.
wvl_0: 5140.8204
dispersion: 0.097661940
press enter
Name Type Value
AD_VIS_ADJ_SW STRING
ANSW1 STRING 3
ANSW2 UNDEFINED <Undefined>
ANSW3 UNDEFINED <Undefined>
ANSWCRVP_SW UNDEFINED <Undefined>
Locals Params Common System
start

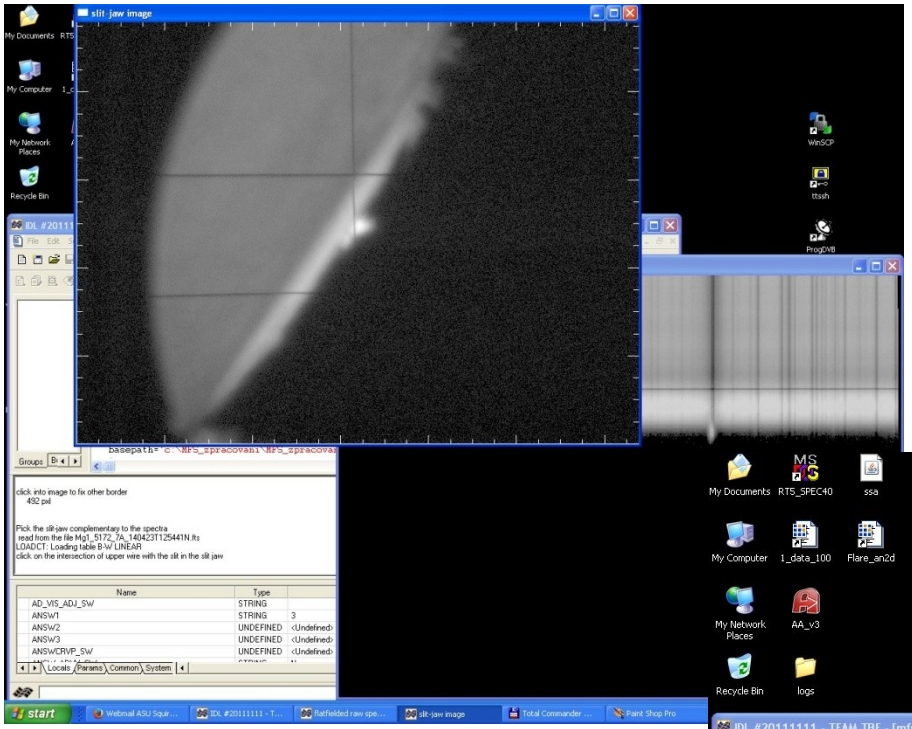
4


flatfielded raw spectra
IDL #20111111 - TEAM TBE - [mfsff_Mg1_5172_7A_v12.5g.pro
FUNCTIONS & PR
pro make_setup
common setup_cb,idl_4degpolyfittin
procedure doing only a set-up us
set-up variable are tresnfered
code via common block setup_cb
basepath .... path to all file n
look like this, e
basepath='c:\MFS_zpracovani\MFS_zp
Make absolute calibration according to local (close) disc intensity? (Y/n)
1 ..... observation at the limb (both disk and limb) (default)
2 ..... observation at the disk (only disk)
Name
Type
Value
AD_VIS_ADJ_SW
STRING
ANSW1
STRING
3
ANSW2
UNDEFINED
<Undefined>
ANSW3
UNDEFINED
<Undefined>
ANSWCRVP_SW
UNDEFINED
<Undefined>

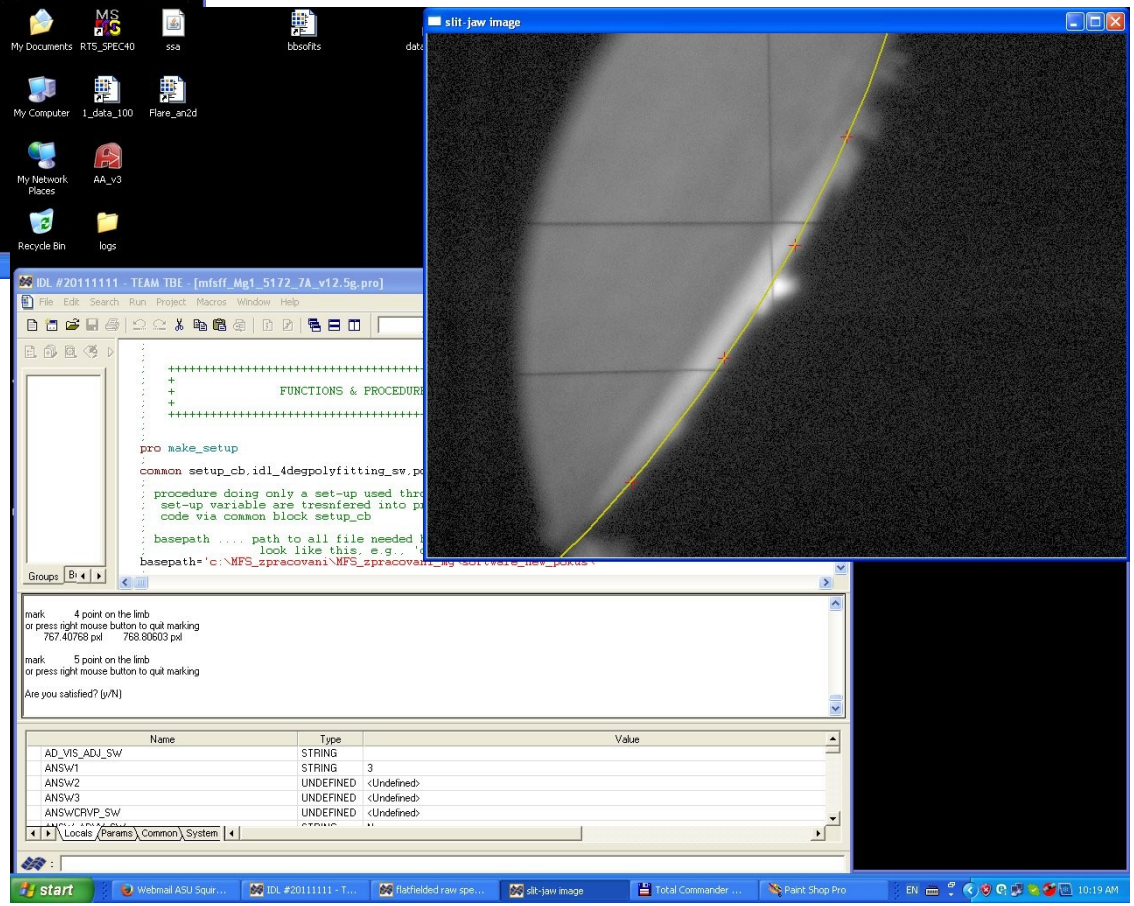
5


Pick the slit-jaw fits file
Look in:
raw_data
Mg1_5172_7A_140423T125344N.fts
Mg1_5172_7A_140423T125441N.fts
Mg1_5172_7A_140423T125537N.fts
Mg1_5172_7A_140423T125852N.fts
Mg1_5172_7A_140423T130103N.fts
Mg1_5172_7A_140423T132101D.fts
Mg1_5172_7A_140423T132102D.fts
Mg1_5172_7A_140423T132103D.fts
Mg1_5172_7A_140423T132104D.fts
Mg1_5172_7A_140423T132105D.fts
Mg1_5172_7A_140423T134401F.fts
Mg1_5172_7A_140423T134402F.fts
Mg1_5172_7A_140423T134403F.fts
Mg1_5172_7A_140423T134404F.fts
Mg1_5172_7A_140423T134405F.fts
SJHa_140423T125344.fts
SJHa_140423T125441.fts
SJHa_140423T125537.fts
SJHa_140423T125852.fts
SJHa_140423T130103.fts
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
File name:
SJHa_140423T125441
Files of type:
.
Open
Cancel
set-up variable are tresnfered into p
code via common block setup_cb
basepath .... path to all file needed
look like this, e.g.,
basepath='c:\MFS_zpracovani\MFS_zpracovan
click into image to fix the first border
308 pxl
click into image to fix other border
492 pxl
Pick the slit-jaw complementary to the spectra
read from the file Mg1_5172_7A_140423T125441N.fts
Name
Type
AD_VIS_ADJ_SW
STRING
ANSW1
STRING
3
ANSW2
UNDEFINED
<Undefined>
ANSW3
UNDEFINED
<Undefined>
ANSWCRVP_SW
UNDEFINED
<Undefined>

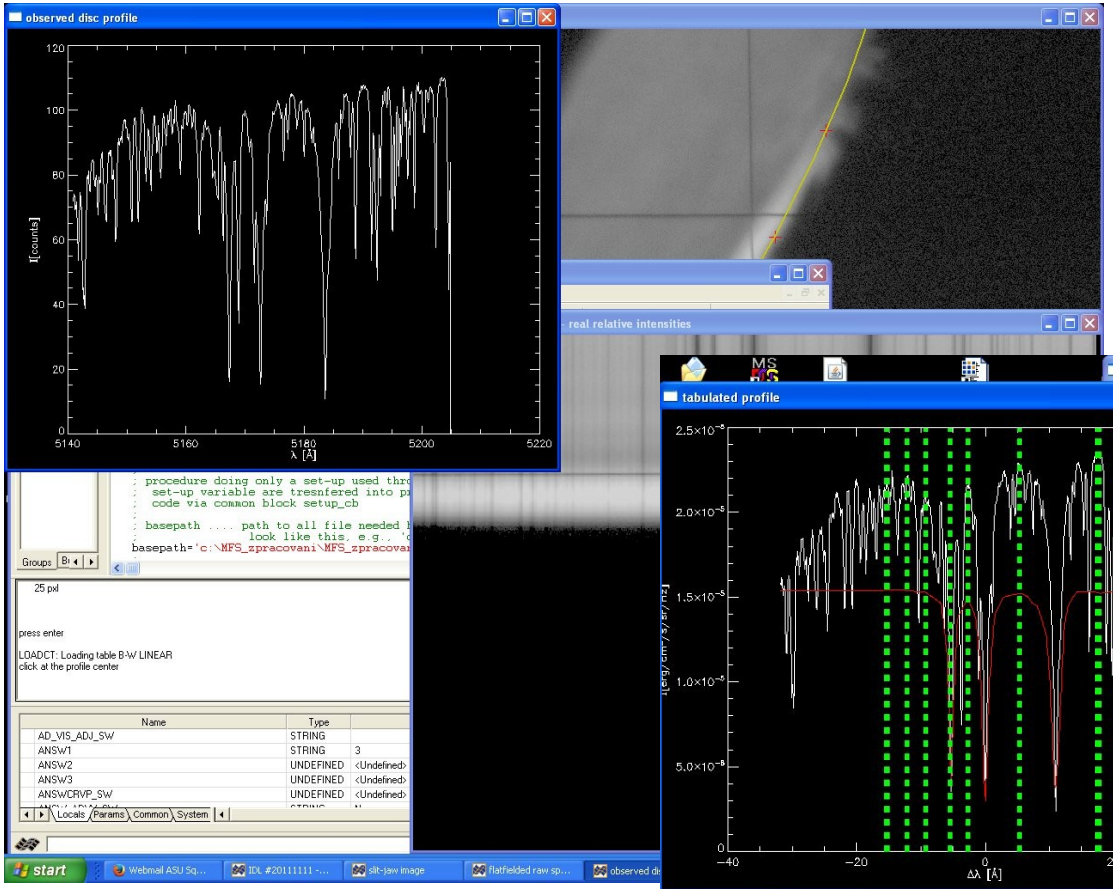
6


slit-jaw image
click into image to fix other border
492 pxl
Pick the slit-jaw complementary to the spectra
read from the file Mg1_5172_7A_140423T125441N.lts
LOADCT: Loading table B-W LINEAR
click on the intersection of upper wire with the slit in the slit jaw
Name
Type
AD_VIS_ADJ_SW
STRING
ANSW1
STRING
3
ANSW2
UNDEFINED
ANSW3
UNDEFINED
ANSWCRVP_SW
UNDEFINED

7


slit-jaw image
IDL #20111111 - TEAM TBE - [mfsff_Mg1_5172_7A_v12.5g.pro]
FUNCTIONS & PROCEDURE
pro make_setup
common setup_cb,idl_4degpolyfitting_sw,p
procedure doing only a set-up used thr
set-up variable are tresnfered into p
code via common block setup_cb
basepath .... path to all file needed
look like this, e.g.,
basepath='c:\MFS_zpracovani\MFS_zpracovani
mark 4 point on the limb
or press right mouse button to quit marking
767.40768 pxl 768.80603 pxl
mark 5 point on the limb
or press right mouse button to quit marking
Are you satisfied? (y/N)
Name
Type
Value
AD_VIS_ADJ_SW
STRING
ANSW1
STRING
3
ANSW2
UNDEFINED
ANSW3
UNDEFINED
ANSWCRVP_SW
UNDEFINED

8


observed disc profile
I[counts]
λ [Å]
real relative intensities
procedure doing only a set-up used thro
set-up variable are tresnfered into pa
code via common block setup_cb
basepath .... path to all file needed b
look like this, e.g., 'c
basepath='c:\MFS_zpracovani\MFS_zpracovan
25 pxl
press enter
LOADCT: Loading table B-W LINEAR
click at the profile center
Name
Type
AD_VIS_ADJ_SW
STRING
ANSW1
STRING
3
ANSW2
UNDEFINED
<Undefined>
ANSW3
UNDEFINED
<Undefined>
ANSWCRVP_SW
UNDEFINED
<Undefined>
Locals
Params
Common
System
start

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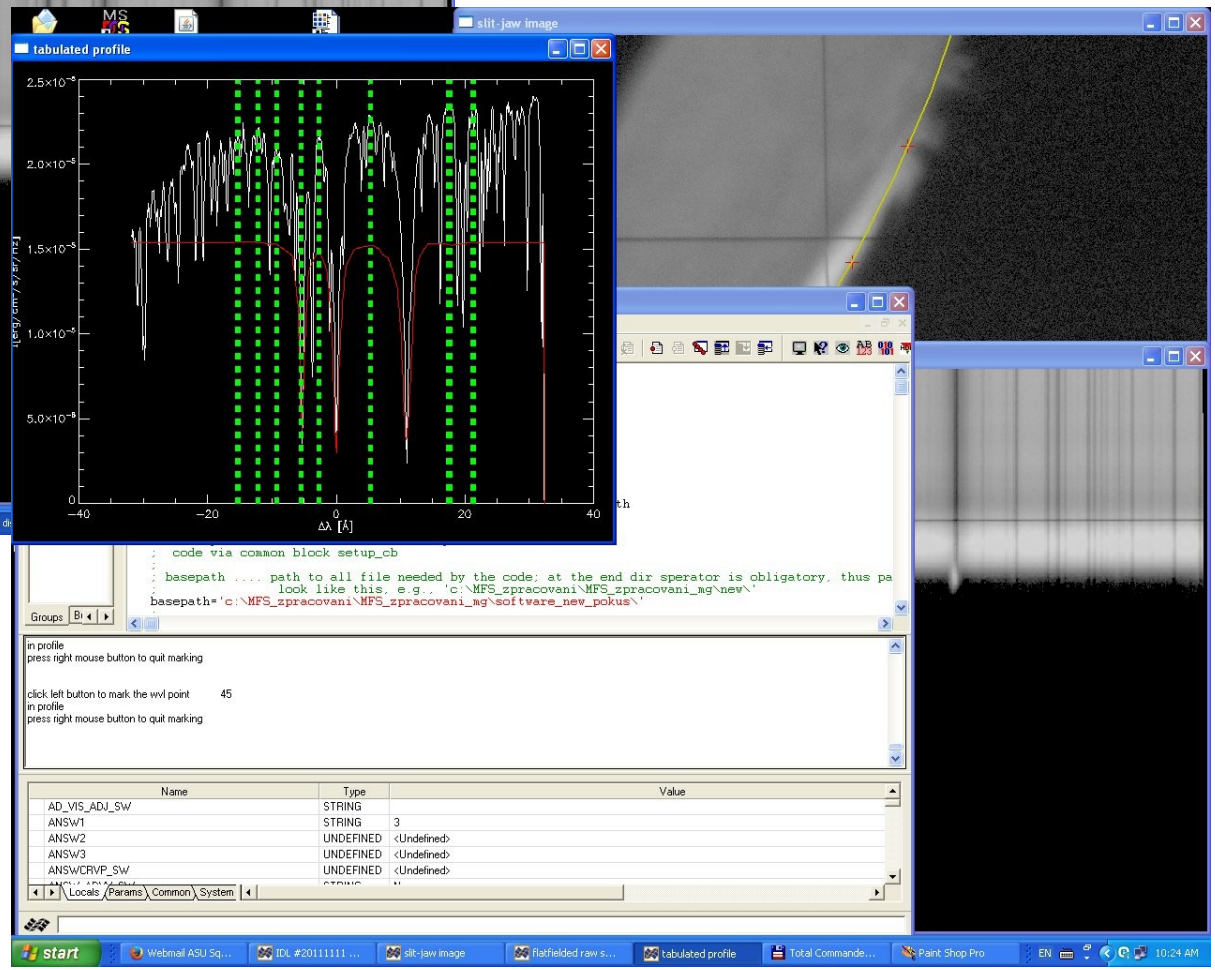
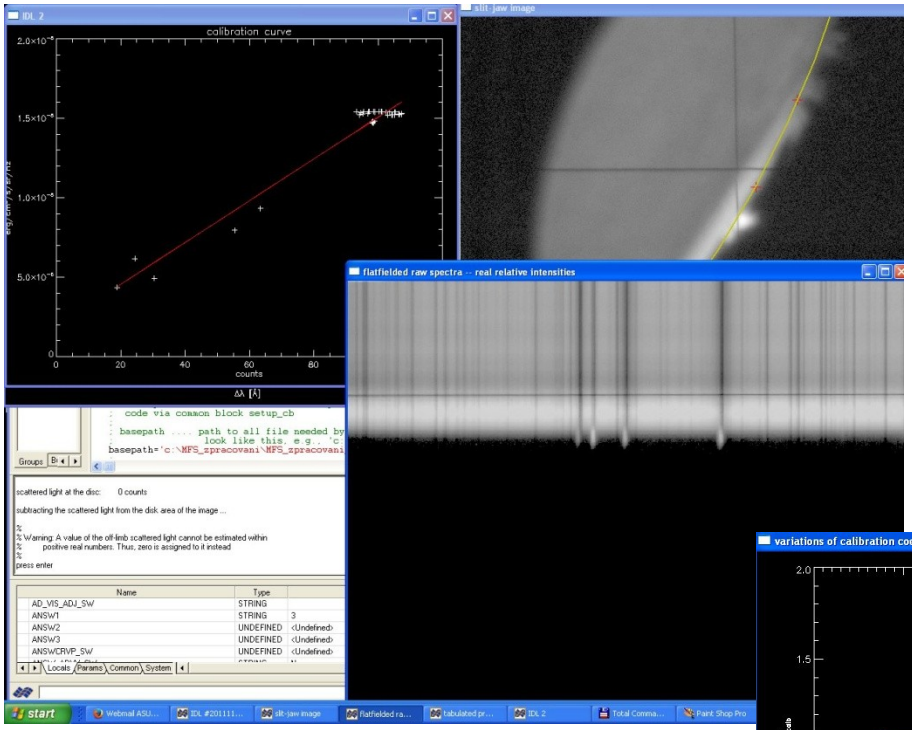

tabulated profile
I[erg/cm²/s/Å]
ΔλΔ [Å]
slit-jaw image
code via common block setup_cb
basepath .... path to all file needed by the code; at the end dir sperator is obligatory, thus pa
look like this, e.g., 'c:\MFS_zpracovani\MFS_zpracovani_mg\new\'
basepath='c:\MFS_zpracovani\MFS_zpracovani_mg\software_new_pokus\'
in profile
press right mouse button to quit marking
click left button to mark the wvl point 45
in profile
press right mouse button to quit marking
Name
Type
Value
AD_VIS_ADJ_SW
STRING
ANSW1
STRING
3
ANSW2
UNDEFINED
<Undefined>
ANSW3
UNDEFINED
<Undefined>
ANSWCRVP_SW
UNDEFINED
<Undefined>
Locals
Params
Common
System
start

10


IDL 2
calibration curve
counts
Δλ [Å]
slit-jaw image
flatfielded raw spectra -- real relative intensities
code via common block setup_cb
basepath .... path to all file needed by
look like this, e.g., 'c:
basepath='c:\MFS_zpracovani\MFS_zpracovani
scattered light at the disc: 0 counts
subtracting the scattered light from the disk area of the image ...
% Warning: A value of the off-limb scattered light cannot be estimated within
% positive real numbers. Thus, zero is assigned to it instead
press enter
Name
Type
AD_VIS_ADJ_SW
STRING
ANSW1
STRING
3
ANSW2
UNDEFINED
ANSW3
UNDEFINED
ANSWCRVP_SW
UNDEFINED
Locals
Params
Common
System
start

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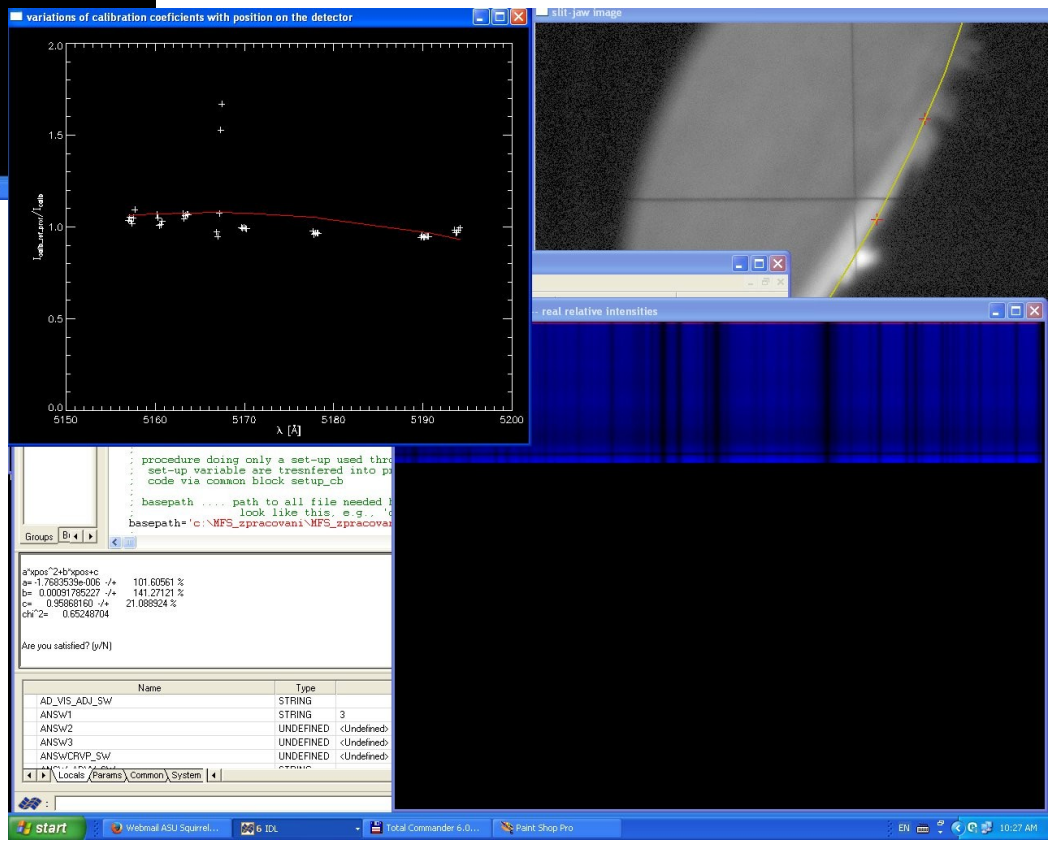
variations of calibration coeficients with position on the detector
λ [Å]
slit-jaw image
real relative intensities
procedure doing only a set-up used thro
set-up variable are tresnfered into pa
code via common block setup_cb
basepath .... path to all file needed
look like this, e.g., 'c
basepath='c:\MFS_zpracovani\MFS_zpracovan
a*xpos^2+b*xpos+c
a= -1.7683539e-006 -/+ 101.60561 %
b= 0.00091785227 -/+ 141.27121 %
c= 0.95868160 -/+ 21.088924 %
chi^2= 0.65248704
Are you satisfied? (y/N)
Name
Type
AD_VIS_ADJ_SW
STRING
ANSW1
STRING
3
ANSW2
UNDEFINED
ANSW3
UNDEFINED
ANSWCRVP_SW
UNDEFINED
Locals
Params
Common
System
start

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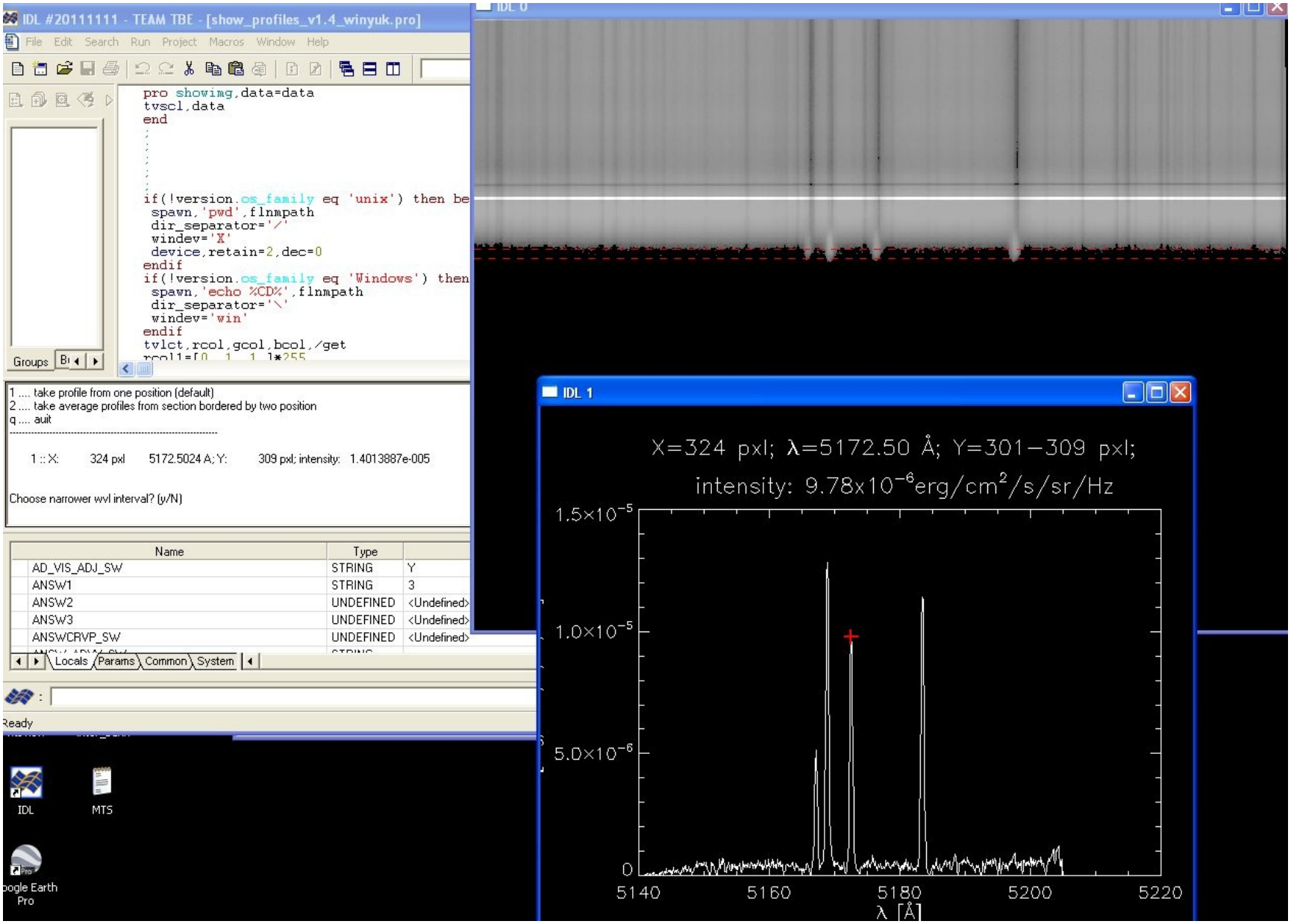
IDL #20111111 - TEAM TBE - [show_profiles_v1.4_winyuk.pro]
File Edit Search Run Project Macros Window Help
pro showimg,data=data
tvscl,data
end
if(!version.os_family eq 'unix') then be
spawn,'pwd',flnmpath
dir_separator='/'
windev='X'
device,retain=2,dec=0
endif
if(!version.os_family eq 'Windows') then
spawn,'echo %CD%',flnmpath
dir_separator='\'
windev='win'
endif
tvlct,rcol,gcol,bcol,/get
1 .... take profile from one position (default)
2 .... take average profiles from section bordered by two position
q .... auit
1 :: X: 324 pxl 5172.5024 A; Y: 309 pxl; intensity: 1.4013887e-005
Choose narrower wvl interval? (y/N)
Name Type
AD_VIS_ADJ_SW STRING Y
ANSW1 STRING 3
ANSW2 UNDEFINED <Undefined>
ANSW3 UNDEFINED <Undefined>
ANSWCRVP_SW UNDEFINED <Undefined>
Locals Params Common System
Ready
IDL
MTS
IDL 1
X=324 pxl; λ=5172.50 Å; Y=301−309 pxl;
intensity: 9.78x10⁻⁶erg/cm²/s/sr/Hz
1.5×10⁻⁵
1.0×10⁻⁵
5.0×10⁻⁶
0
5140
5160
5180
5200
5220
λ [Å]