

Science motivations for SPLAT-VO Improvements

Petr Škoda, David Andrešič

Astronomical Institute, Academy of Sciences, Ondřejov
Faculty of Computer Science Technical University, Ostrava

Czech Republic

support of grant GAČR P103/13/08195S

IVOA Interop Meeting , Applications session
University of Heidelberg 13th May 2013

Information from (multi) spectral lines

Position (wavelength):

Chemical elements

Excitation / Ionization state (Grid of models)

If unknown – SLAP, TSAP (molecules in IR)

RV (binarity, orbital parameters...)

Shape

Stellar parameters (Teff, log g, rotation)

Stellar activity (Turbulence, granulation)

core/wings – different physics – optical depth, limb darkening

Expansion, shells, winds (P Cyg, Novae)

Time variability (LPV)

Change of physical state (Be, outburst)

Spots (Mg field, overabundance – Ap)

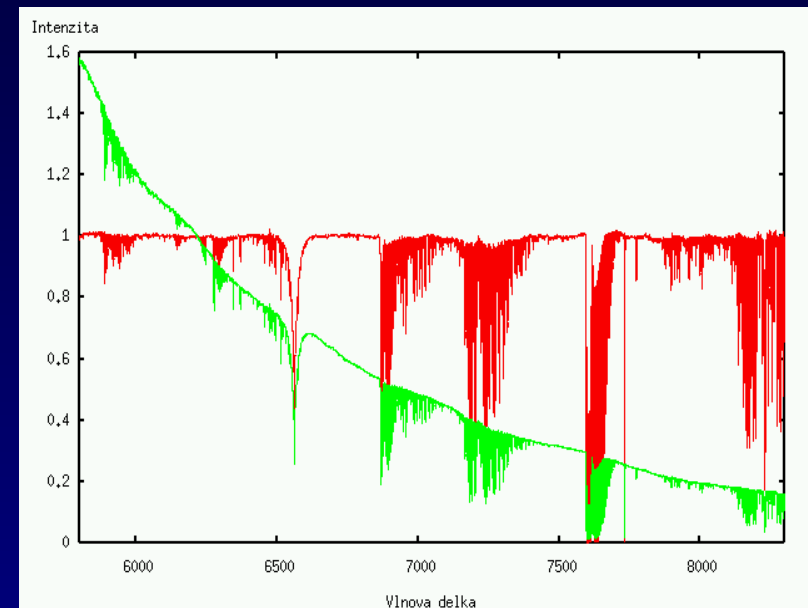
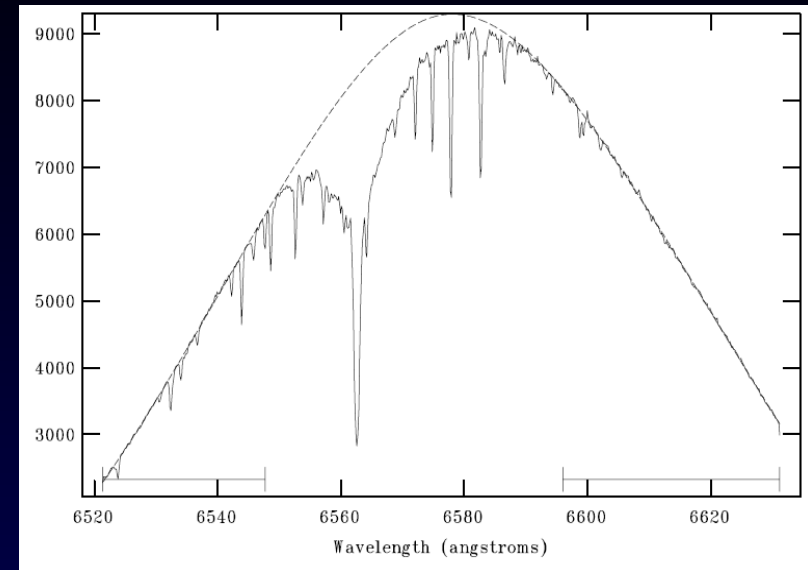
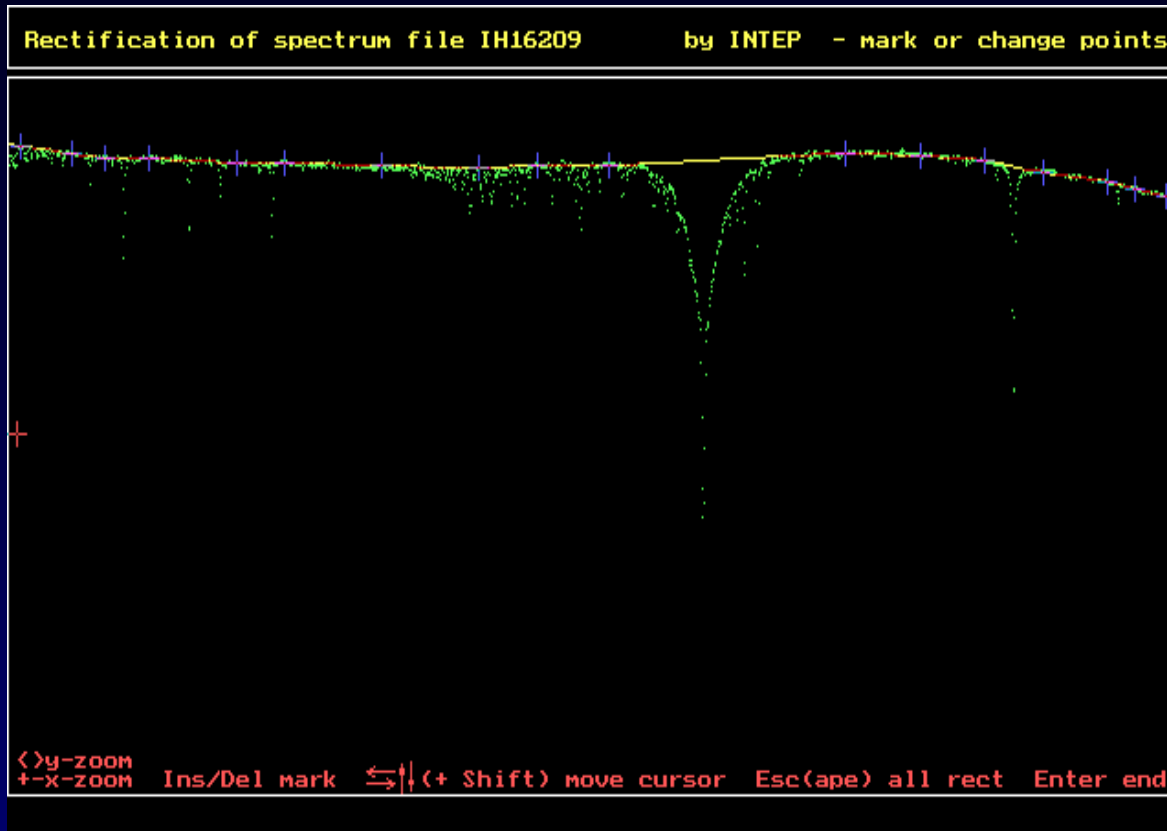
Pulsations (Delta Ceph, RR Lyr, Miras)

Non radial pulsations (NRP)

Multiple systems – disentangling of orbital parameters, individual spectra

Detection of ES planets in spectra (Bisector – small contributions enlarged)

Rectification (Normalization)



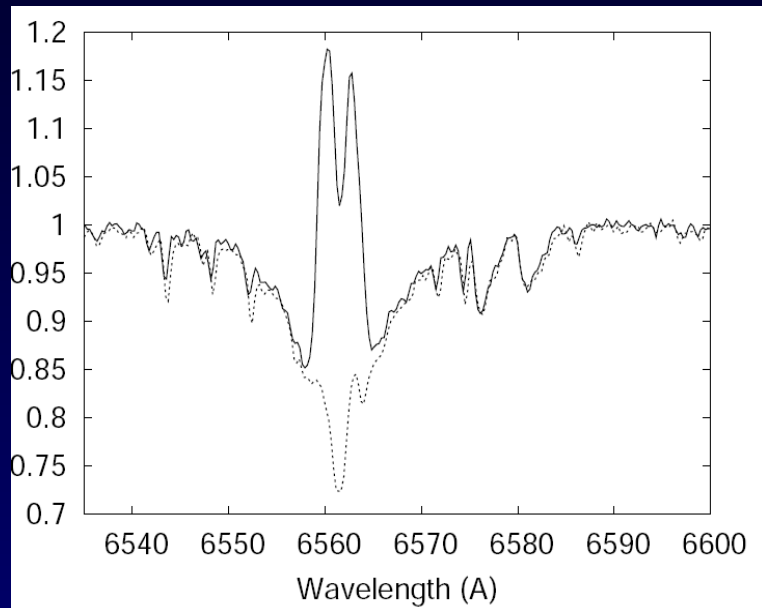
Echelle - tricky

Changes of Line Profiles in Time

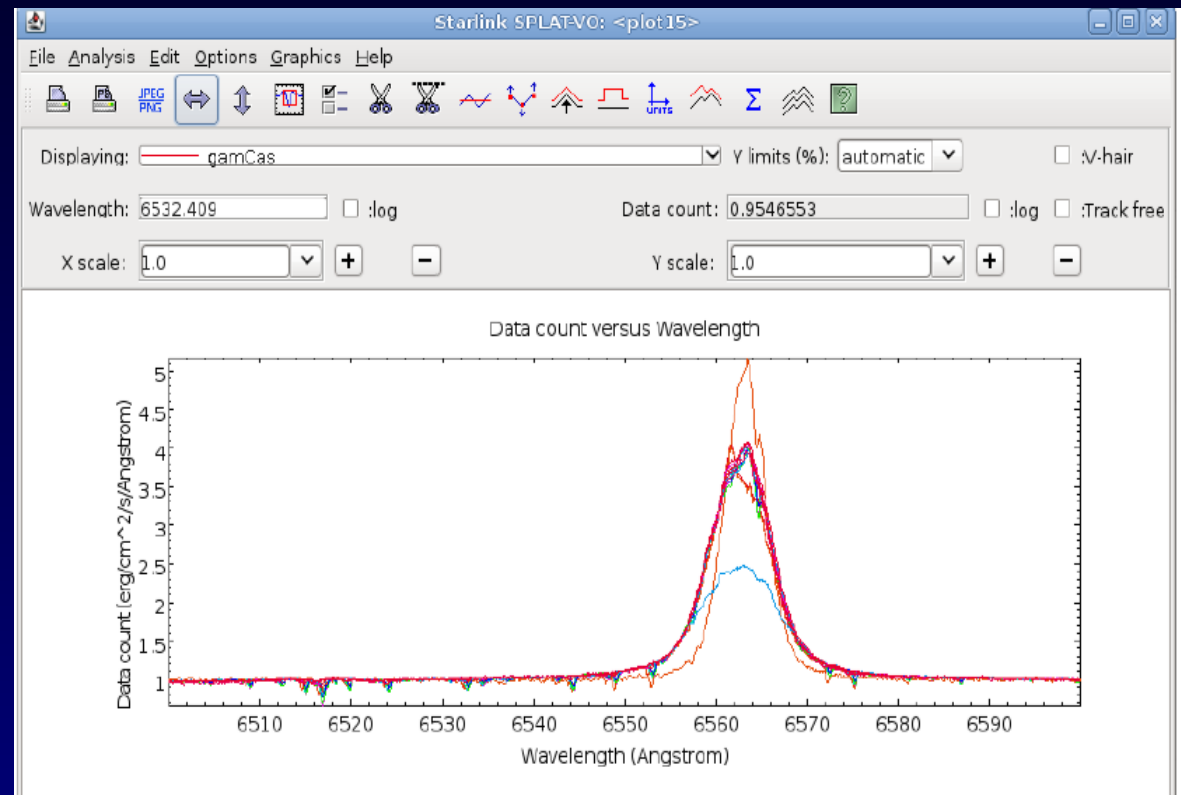
Emission/absorption, shell phases

Time evolution of object – mass transfer,

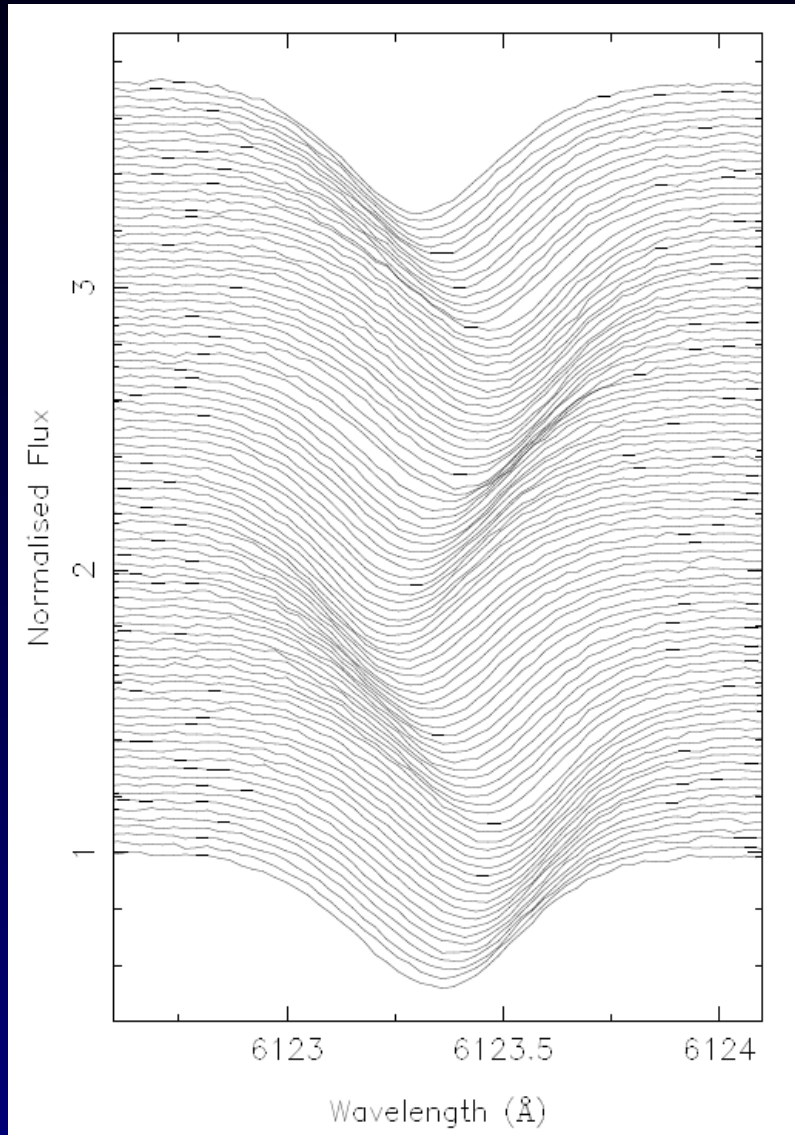
V/R variations



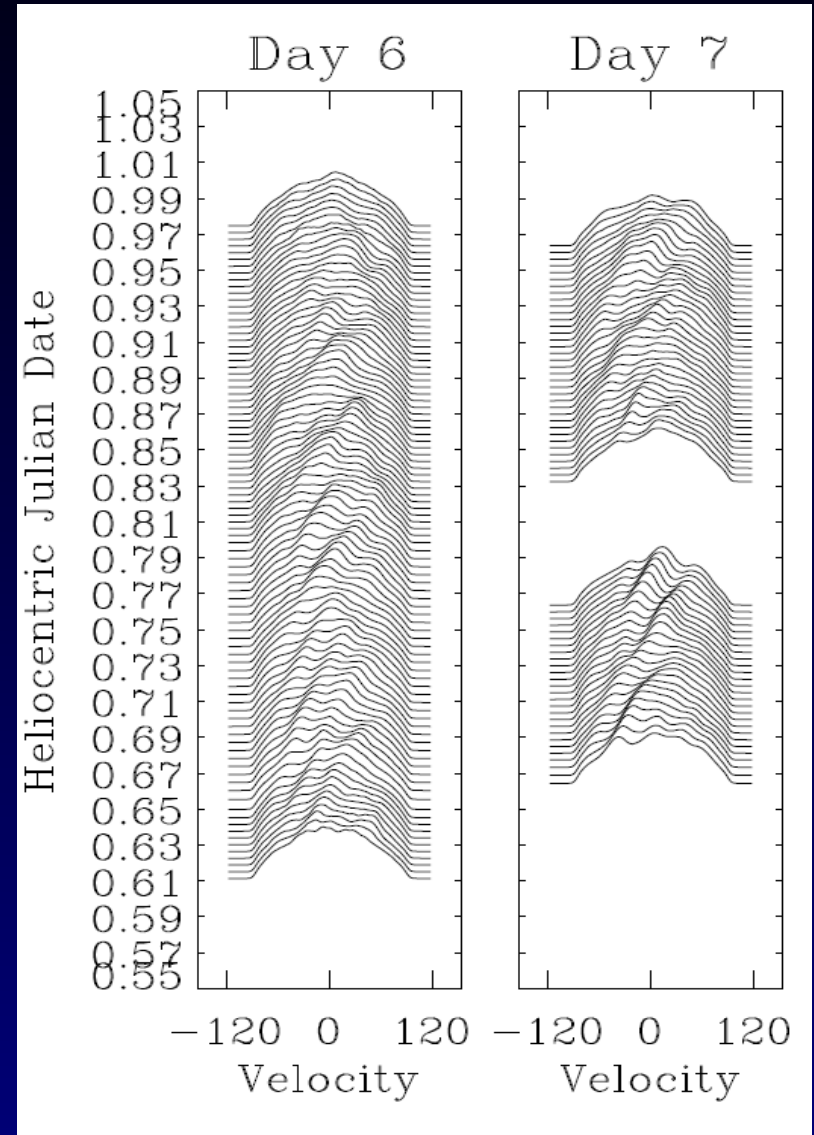
HD6226 : Slechta and Skoda 2004



Measured Pulsations



Rho Pup – del Sct type



Eps Cep - del Sct type

Bachelor Thesis 2013

VŠB – Technical University of Ostrava
Faculty of Electrical Engineering and Computer Science
Department of Computer Science

**Program pro interaktivní analýzu
spekter v prostředí Virtuální
observatoře**

**Programme for Interactive Spectra
Analysis in Virtual Observatory
Environment**

Motivation – spectra series of one star

Saving the STACK of spectra in FITS (every spectrum 1 extension) read by FITSIO ASCII list

Cutout of spectral regions on selected spectra (original only current)

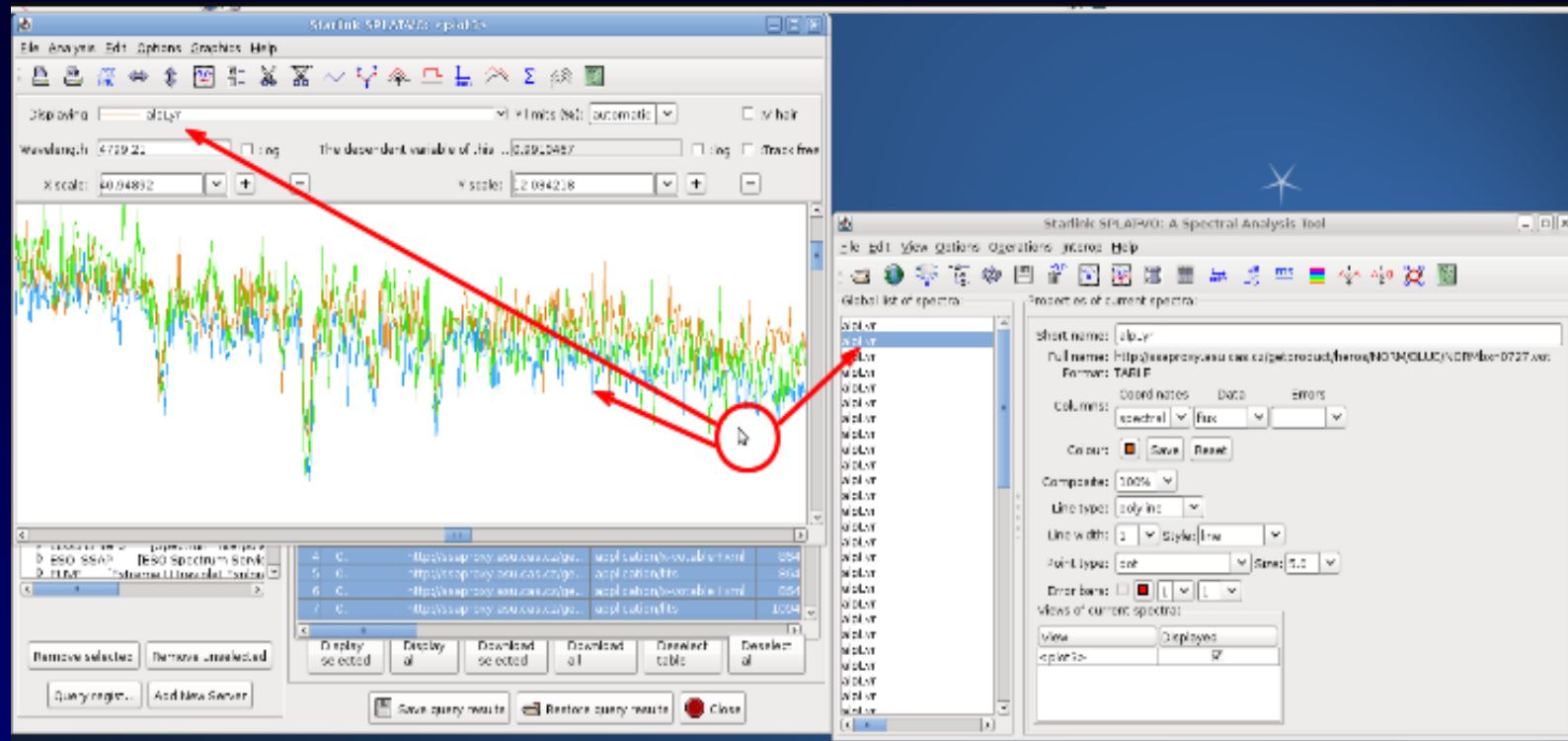
Selection of particular spectrum – in ALL windows and VISUALLY (noisy, bad)

SPLAT sent spectra shown in ONE window (overplot stack)

Build script – to make the jar (collection unpublished info and cleaning comments of P. Draper)

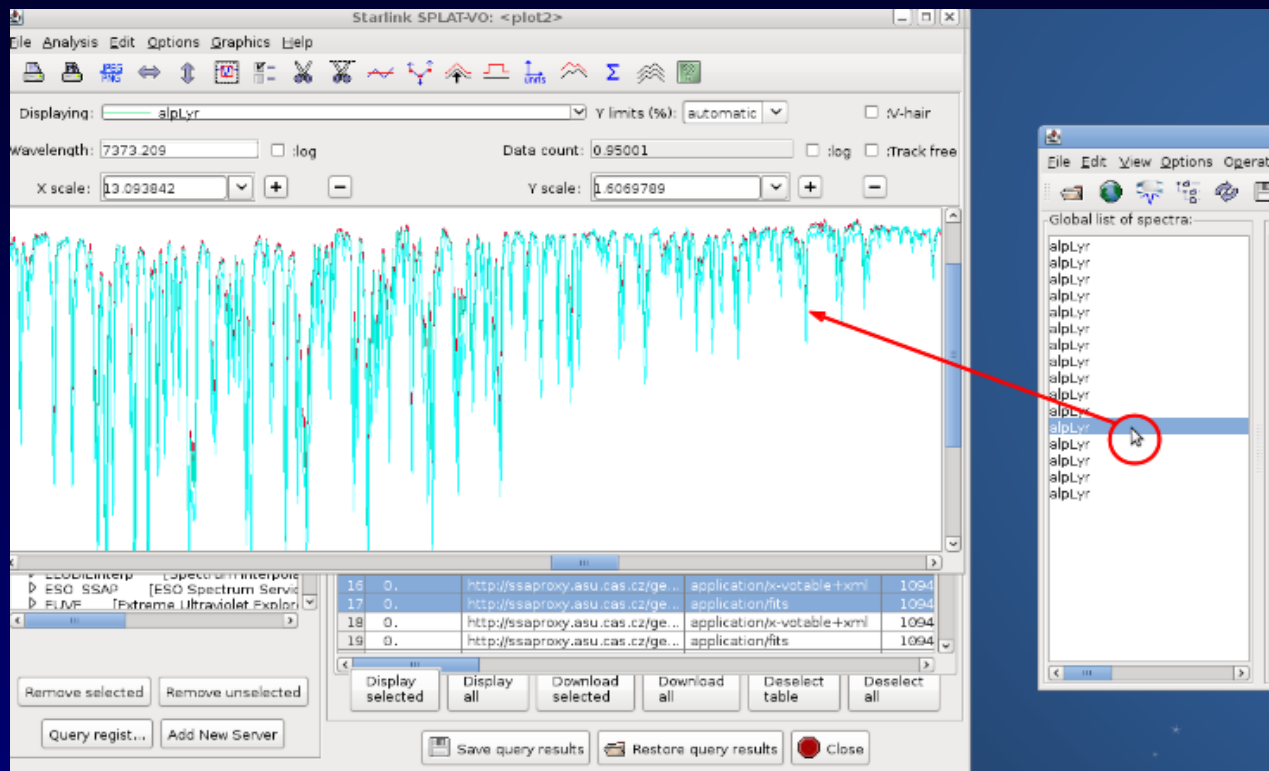
Visual spectra selection

Clicking nearby to a spectrum highlights it, selects it in local spectra drop-down and in the Global list of spectra



Highlighting the selected spectrum

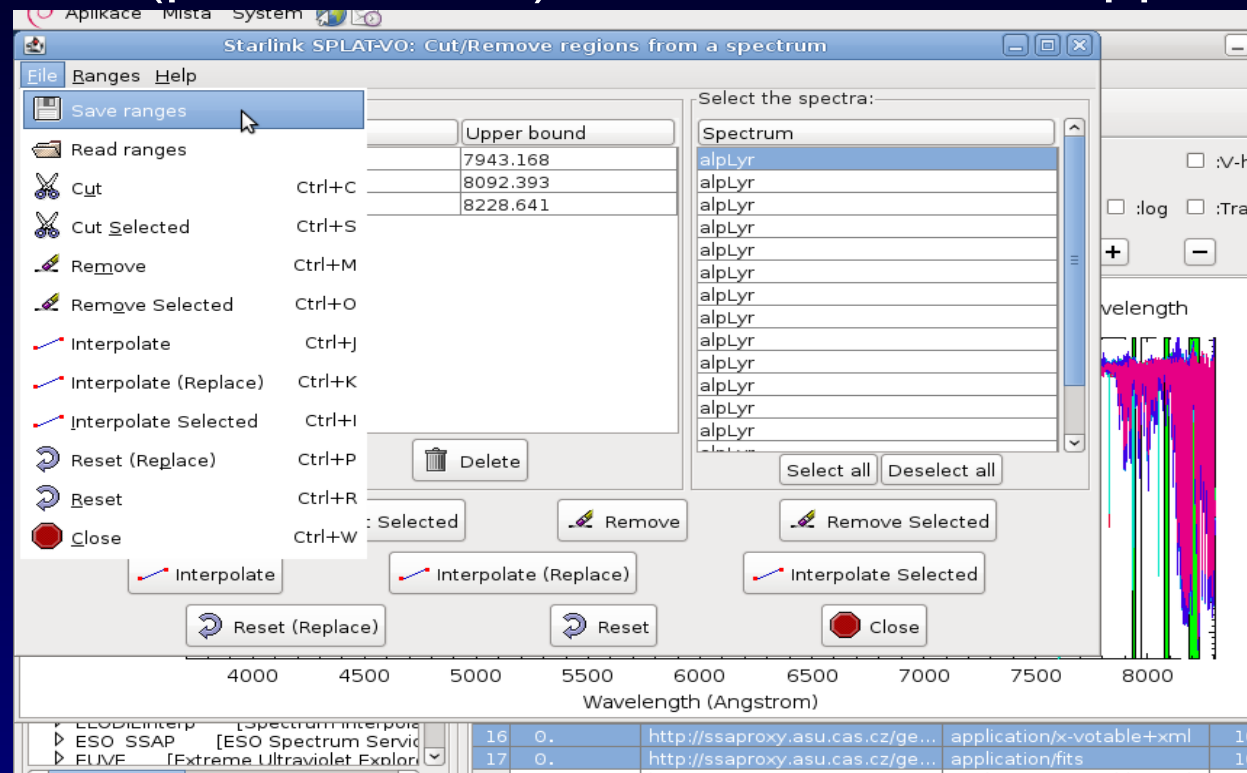
After clicking on a spectrum in Global list of spectra, the spectrum gets highlighted in all its plot windows



Cut window: saving ranges

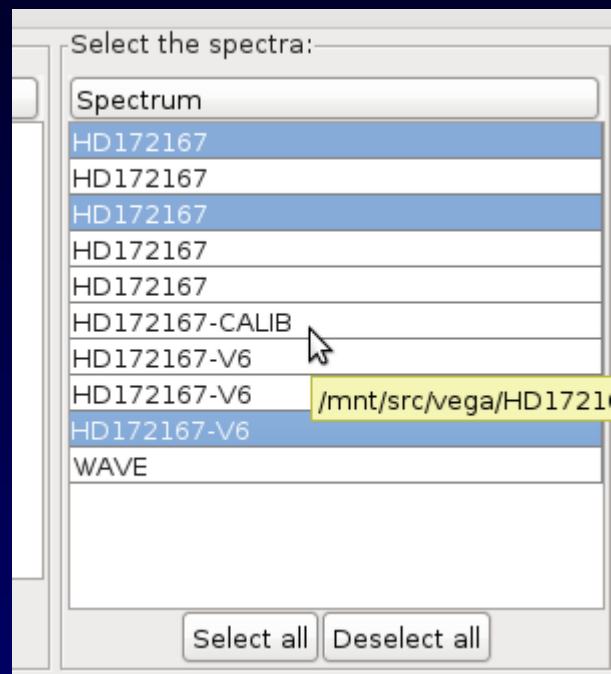
Added ability to save the currently defined ranges to a text file

Output format (per each line): <lower bound> <upper bound>



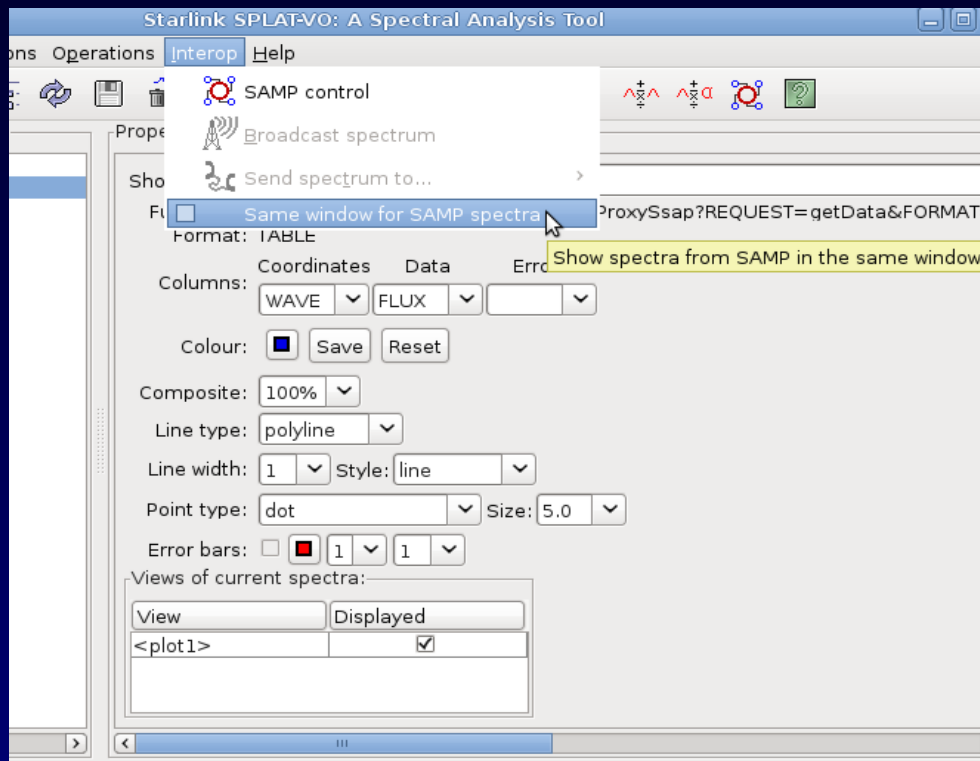
Cut window: performing on multiple spectra

Added ability to choose the spectra that will be affected



All SAMP spectra to the same window

Ability to plot the spectra received via SAMP protocol to the same window automatically



DEMO

Global overview of the Archive – stable emissions ...

Jaroslav Vážný

http://physics.muni.cz/~ssa/archive/1/sao49725_detail.html

Web with individual stars overview – SAMP

Normalization , cutout of H α in SSA server (getData)

Normalization = how to do automatically ?

(ingestion, on the fly, so far robust fit – Bukvic et al. In F90)

Experimental visualization of light curves