WD-BASS

Prepare your data. 3 columns:
Wavelength (Angstroms),
Flux (erg/cm^2/s/Hz),
Flux error (erg/cm^2/s/Hz).

Run **create_single** or **create_double** (or your own adapted file for your needed use) in the directory where your files are stored

Did it create a yaml file with your spectra inside?

No → Check input data format and compare to example input data → Prepare your data. 3 columns: Wavelength (Angstroms), Flux (erg/cm^2/s/Hz), Flux error (erg/cm^2/s/Hz).

Yes

Do you want to fit the photometry?

Yes → Insert your photometry
From CDS -> Run WD-BASS normally with run_single or run_double and put fit_phot_sed: True in the yaml file. A file photSED.vot should be downloaded and placed in a folder called "out". You can do this manually too.

You can manually input whatever photometry you want in lists on the yaml file, with keyword
"External_AB_mag" (float)
"External_AB_mag_err" (float)
"External_Filter" (string, "")

Supported filters and their names are found in the WD-BASS install directory -> Filters

Prevew photometry?

No → Open the file. Change the star type (e.g. "DA", "GG", "DB", "LL"). change the resolution at each spectral line (R=dlambda/lamda), sigma clipping, scaling, any file you want to ignore, number of walkers, burning/steps. etc.

When happy run in terminal **run_single** or **run_double**. The output will appear in a new folder "out"

Yes → In the yaml file...
plot_phot_spectrum: True
phot_min_val: 0.0000 (your value)

Execute run_single or run_double, see the popup window, ctrl+c out of the code.
When happy,
plot_phot_spectrum: False

Do you want to fit the extra RV components?

Yes → Single line fitting or multiple line fitting?

Single → Do you want to use
1) **run_single_RV**
2) **run_single_RV_gauss / run_double_RV_gauss**
3) **run_double_common_RV12**
(if double star fit)

run_XXX_RV_gauss → Take the atmospheric fit and add another gaussian component to all stars that were modelled. The FWHM is restricted to a few angstroms just to fit the line core

run_single_RV → Area around 20 Angstroms of ref_wl centre is fitted for the line with largest wavelength. Optimal normalisation performed

run_double_common_RV12 → Stack the signature of the two stars and fit with a common RV → Area around 20 Angstroms of ref_wl centre is fitted for the line with largest wavelength. Optimal normalisation performed

Multiple → Fix the atmospheric parameters in the yaml file (no need to change scaling unless fitted).
Make fit_phot_SED: False.
(Optional) Edit number of walkers/burnin/steps

Fitting Keplerian motion?

No → The spectra will be fit in the same way as atmospheric fitting but with a fixed solution one star at a time. The results will be output to the "out" folder and then merged at the end

Yes → Execute run_single or run_double

Output to a folder called "RVfit" and save the result to RVfit_results.dat

No → (Optional) Tweak input boundaries and repeat all

End