

RVdiff – Radial Difference between Blue and Red Edge

Manual refers to software version 1.0.0.0

Important Notes

This version supports only **emission** line spectra!

You should normalize the continuum around the emission line to flux = 1.0.

There should only be one emission line in the data.

You need a “.DAT” file format with Å as wavelength.

Functionality of RVdiff

Emission lines of Be stars (e.g. H α) often have an asymmetric shape. This results on different angles of the blue and red edge.

This software calculate the center point between blue and red on the wavelength axis by extending the edge-lines down to flux = 1.0 (black dotted vertical line) and the crossing point of the edge-lines on the top (yellow dotted vertical line).

The difference is calculated as radial velocity.

A value above 0 (red result number) means that the blue side angle is steeper than the red side. The red part is more broaden than the blue side. If the value is below 0, it is opposite.

But the edges are mostly not linear and disturbed by water lines or several effects in the disk. For this reason you can choose a relatively linear area by entering “Flux low” and “Flux high” value.

Additional you can define a tolerance in % of the chosen area.

The “Flux low” value is the absolute lowest value, the “Flux high” the absolute highest.

The first angle is calculated by drawing a line through this two points.

If you have defined a tolerance bigger than 0, the software defines 20 points within Flux-low plus tolerance and Flux-high minus tolerance and draws 20 lines through these points. The result is an average value of all 20 angles.

This makes sense because the chosen area is mostly not completely linear.

To extrapolate effects from this data, you should try to define the same area on each spectrum of a star. This are not every time the same flux values, because there can be differences in the exposure or in the signal itself. You should find visually the same shapes to define the flux limits.

This RV difference value is independent from heliocentric velocity!

Description of the diagram

