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Poster

RESOLVING POWER OF SPECTROGRAPHS: IMPACT OF THE SPECTRAL LINE SPREAD FUNCTION

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When passing the spectrograph, an observed spectrum is broadened due to the limited resolving power R of the apparatus (i.e., $\Delta\lambda_{\mathrm{FWHM},R} = \lambda/R$). Theoretically, R is given by the instrument components, e.g., in the case of a diffraction grating, by the number of illuminated slits. In practice, however, the exact spectral Line Spread Function (LSF), which describes the shape of an infinitely sharp absorption (or emission) line on the spectrograph, is highly dependent on the instrument and is therefore not trivial to determine. By evaluating hundreds of absorption lines in the space telescope imaging spectrograph ultraviolet spectrum of the hot subdwarf star Feige 110, it could be shown that, in this case, the convolution with a corresponding Gaussian ($\Delta\lambda_{\mathrm{FWHM},R} = \Delta\lambda_{\mathrm{FWHM,GAUSS}}$) on average results in too-small line widths. To obtain a consistent treatment of different spectrographs' R, a correction factor can be attached to better match the respective LSF.