aesop: ARC Echelle Spectroscopic Observation Pipeline

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Summary

The ARC Echelle Spectroscopic Observation Pipeline, or `aesop`, is a high resolution spectroscopy software toolkit tailored for observations from the Astrophysics Research Consortium (ARC) Echelle Spectrograph mounted on the ARC 3.5 m Telescope at Apache Point Observatory. `aesop` picks up where the traditional IRAF reduction scripts leave off, offering an open development, object-oriented Pythonic analysis framework for echelle spectra.

Basic functionality of `aesop` includes: (1) blaze function normalization by polynomial fits to observations of early-type stars, (2) an additional/alternative robust least-squares normalization method, (3) radial velocity measurements (or offset removals) via cross-correlation with model spectra, including barycentric radial velocity calculations, (4) concatenation of multiple echelle orders into a simple 1D spectrum, and (5) approximate flux calibration.

Some handy additional utilities include methods for download PHOENIX model spectra (Husser et al., 2013), and methods for measuring the Mount Wilson Observatory-calibrated CaII H & K "S" index (B. M. Morris et al., 2017). aesop was built from the Astropy package-template, and thus includes self-building documentation and continuous integration (The Astropy Collaboration et al., 2018).

Acknowledgements

References

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