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Panchromatic Calibration of Astronomical Observations with State-of-the-Art White Dwarf Model Atmospheres

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Theoretical spectral energy distributions (SEDs) of white dwarfs provide a powerful tool for cross-calibration and sensitivity control of instruments from the far infrared to the X-ray energy range.

Such SEDs can be calculated from fully metal-line blanketed non-LTE model-atmospheres that are e.g. computed by the Tübingen Non-LTE Model-Atmosphere Package (TMAP) that has arrived at a high level of sophistication. TMAP were successfully employed for the reliable spectral analysis of many hot, compact post-AGB stars.

High-quality stellar spectra obtained over a wide energy range establish a data base with a large number of spectral lines of many successive ions of different species. Their analysis allows to determine effective temperatures, surface gravities, and element abundances of individual (pre-)white dwarfs with very small error ranges.

We present applications of TMAP SEDs for spectral analyses of hot, compact stars in the parameter range from (pre-) white dwarfs to neutron stars and demonstrate the improvement of flux calibration using white-dwarf SEDs that are e.g. available via registered services in the Virtual Observatory.

Summary

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