

THE EXTREME HELIUM STAR BD+10 2179 - THE RESULT OF A WD MERGER?

Thomas Kupfer

*Dr. Karl Remeis-Observatory & ECAP, Astronomical Institute, Friedrich-Alexander University
Erlangen-Nuremberg, Sternwartstr. 7, 96049 Bamberg, Germany*

Extreme Helium Stars (EHes) are hydrogen-deficient supergiants of spectral type A and B and immediate progenitors of white dwarfs. The atmosphere is strongly enriched in helium, carbon, nitrogen and neon, while hydrogen is highly depleted by a factor of 10 000 or more. Therefore they must be in a very late stage of evolution. Two different formation scenarios have been discussed over the decades. The first one is the late thermal pulse model (LTP), where a He shell flash at the white dwarf cooling sequence forces the star to expand to become a supergiant and start the post-AGB evolution again. The second model invokes the merger of a He white dwarf with a more massive C-O white dwarf in a close binary. The aim of this work is to do a full NLTE analysis for one member of these rare class of stars using high resolution FEROS and UVES spectra which cover the full optical range. The quantitative spectral analysis was carried out using LTE model atmospheres computed with ATLAS12 and NLTE line formation calculations using DETAIL and SURFACE. The results will be discussed in the context of the abundance pattern predicted by the rivalling models.