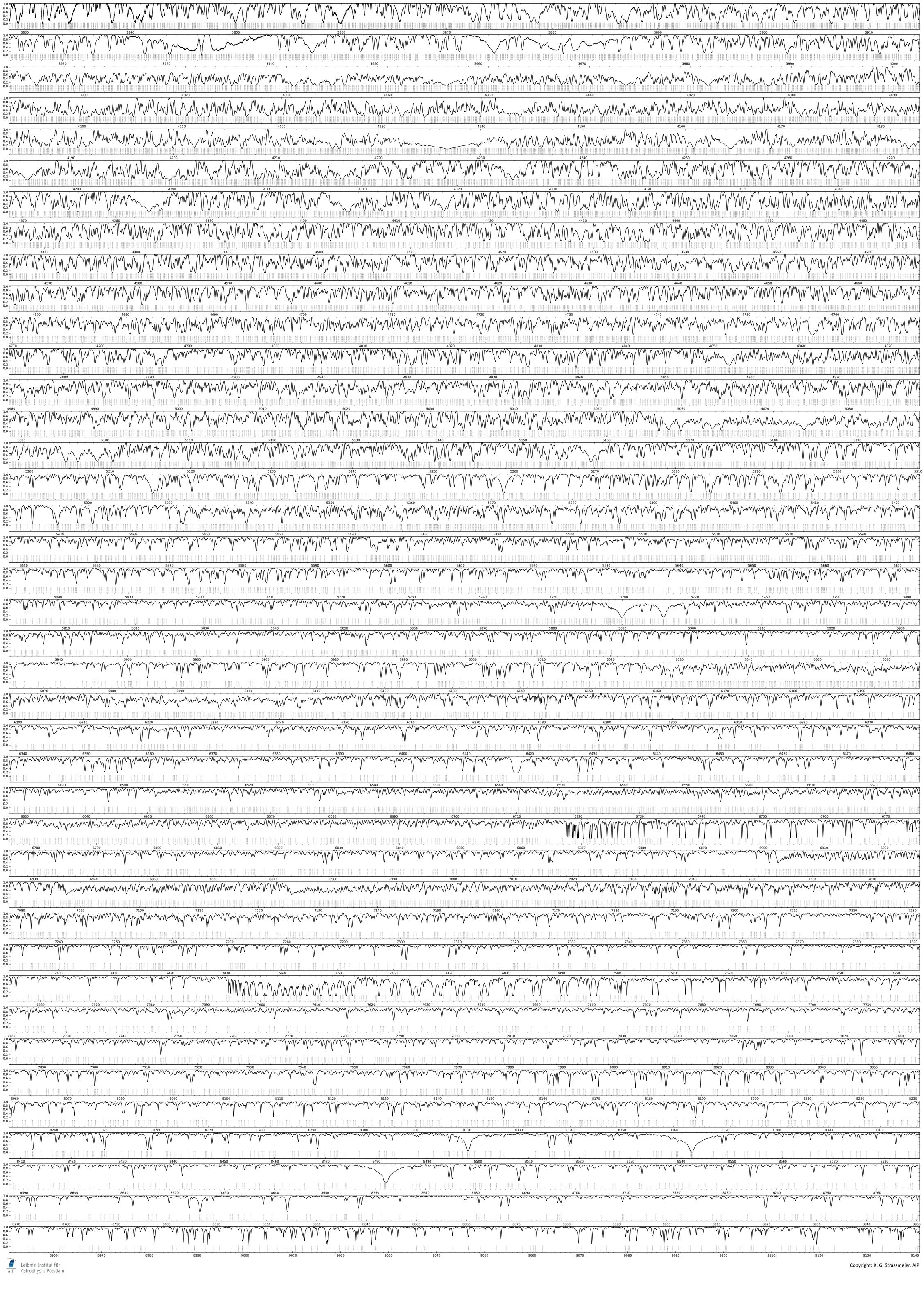
The fingerprint of a star: α Cet

α Ceti (92 Cet = HD 18884), named Menkar, is the coolest giant in our PEPSI sample with a M1.5 IIIa spectral classification. Despite having the Bayer designation α Ceti it is actually the second brightest star in the constellation Cetus. It has more than twice the mass of the Sun and, as a giant star has expanded to about 89 times the Sun's radius. The large area of the photosphere means that it is emitting about 1,455 times as much energy as the Sun, even though the effective temperature is only 3,795 K (compared to 5,778 K on the Sun). The relatively low temperature gives Menkar the red hue of an M-type star. It has evolved from the main sequence after exhausting the helium at its core. As it begins to burn its carbon core it will probably become a highly unstable star like Mira before finally shedding its outer layers and forming a planetary nebula, leaving a relatively large white dwarf remnant. This poster shows the optical spectrum of α Cet obtained with the Potsdam Echelle Polarimetric and Spectroscopic Instrument (PEPSI) of the Large Binocular Telescope (LBT). It plots the normalized intensity as a function of wavelength λ in Angströms (1Å =0.1nm) from the top left corner to the bottom right corner. The PEPSI spectrum covers the wavelengths between 3820 Å (top left) and 9130 Å (bottom right) with an average spectral resolution of R=$\lambda/\Delta\lambda$=220,000 or approximately 1.4 km/s. Its average dispersion is 0.012 Å /pixel. Integration time with the LBT was 20 sec and consists of 2-9 exposures in all six cross dispersers. The signal-to-noise ratio (S/N) of the spectrum peaks at 1830:1 at 5840 Å and has a low of 300:1 near the blue cutoff. The exposures were obtained on September 27, 2015 and November 20, 2015. A subset of spectral absorption lines is identified in the graphics and marked with dashes beneath the spectrum. The annotation indicates the chemical element (e.g., Fe for iron), the ionization state (I for a neutral line, II for an ionized line), and the wavelength in Angström. The original spectrum has been published in *Astronomy & Astrophysics* (Strassmeier, K. G., Ilyin, I., & Weber, M. 2018, A&A, **612**, A45; see https://pepsi.aip.de/).



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