



The fingerprint of a star: α CMi

α Canis Minoris (10 CMi = HD 61421), better known as Procyon. It is a binary star system, consisting of a bright main-sequence star of spectral type F5 V-IV, named Procyon A, and a faint white dwarf companion of spectral type DQZ, named Procyon B. As determined by the Hipparcos astrometry satellite, it lies at a distance of just 11.46 light-years and is therefore one of Earth's nearest stellar neighbours. Procyon A is bright for its spectral class, suggesting that it is evolving into a subgiant that has nearly fused its core hydrogen into helium, after which it will expand as the nuclear reactions move outside the core. As it continues to expand, the star will eventually swell to about 80 to 150 times its current diameter and become a red or orange color. This will probably happen within 10 to 100

million years. The effective temperature of the stellar atmosphere is an estimated 6,530 K. It is 1.5 times the solar mass, twice the solar radius, and has 7 times the Sun's luminosity. Both the core and the envelope of this star are convective; the two regions being separated by a wide radiation zone. This poster shows the optical spectrum of α CMi 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 5 sec, and 5 min with the VATT, and consists of 5-14 exposures in all six cross dispersers. The signal-to-noise ratio (S/N) of the spectrum peaks at 1600:1 at 8250 Å and has a low of 500:1 near the blue cutoff. The exposure was obtained on April 5 and 8, 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/>).

