



The fingerprint of a star: α UMa

α Ursae Majoris (50 UMa = HD 95689), named Dubhe, is the A component of a wide spectroscopic binary and is a class III giant of spectral type K0 with a main sequence A7.5 (or F0) companion star. At a distance of 123 light years the B companion orbits at a mean separation of about 23AU and completes an orbit every 44.4 years. α Ursae Majoris has been reported to vary in brightness by about a thousandth of a magnitude. Ten radial oscillation modes have been detected, with periods between 6.4 hours and 6.4 days. Despite of being named Alpha it is the second brightest star in the constellation. This poster shows the optical spectrum of α UMa 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 ($1\text{\AA}=0.1\text{nm}$) 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 10 sec , and 10 min with the VATT, and involve between 3-6 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 330:1 near the blue cutoff. The LBT exposure was obtained on April 9, 2015, the VATT exposures on April 6, 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/>).

