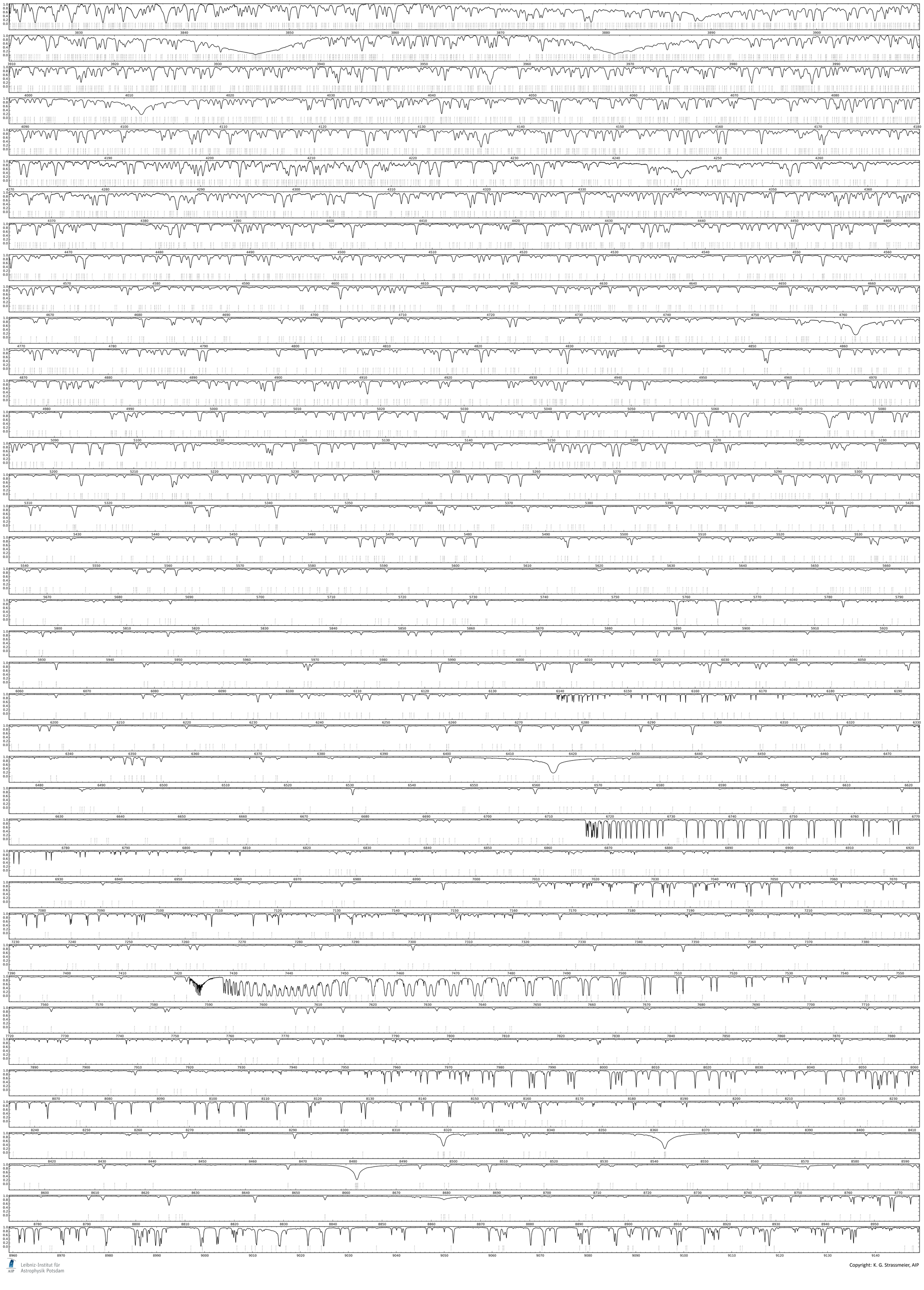
The fingerprint of a star: θ UMa

θ Ursae Majoris (25 UMa = HD 82328) is an evolved F6-7 dwarf star, classified of luminosity V-IV. The distance to this star has been measured directly using the parallax method, yielding an estimated value of 43.96 light-years. It is still a suspected spectroscopic binary system although there was not sufficient evidence to support a Keplerian orbit. There is a 14th-magnitude common proper motion companion at an angular separation of 4.1″, so this may potentially be a triple star system. The primary component of this putative system is a dwarf star that is evolving away from the main sequence. It is larger than the Sun with 141% of the Sun's mass and 250% of the Sun's radius. Consequently, it is shining brighter and evolving more rapidly than the Sun, with a luminosity nearly eight times the Sun's at an age of 2.2 billion years. This energy is being radiated from the star's outer atmosphere at an effective temperature of 6,300 K. There may be one or more planets around the primary star with masses between 0.24 and 4.6 Jupiter masses and average separations spanning between 0.05 and 5.2 AU. This poster shows the optical spectrum of θ 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 (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 1 min, and 30 min with the VATT, and consists of 4-20 exposures in all six cross dispersers. The signal-to-noise ratio (S/N) of the spectrum peaks at 1670:1 at 8250 Å and has a low of 550:1 near the blue cutoff. The exposure was obtained on April 11 and June 3, 2016. 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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