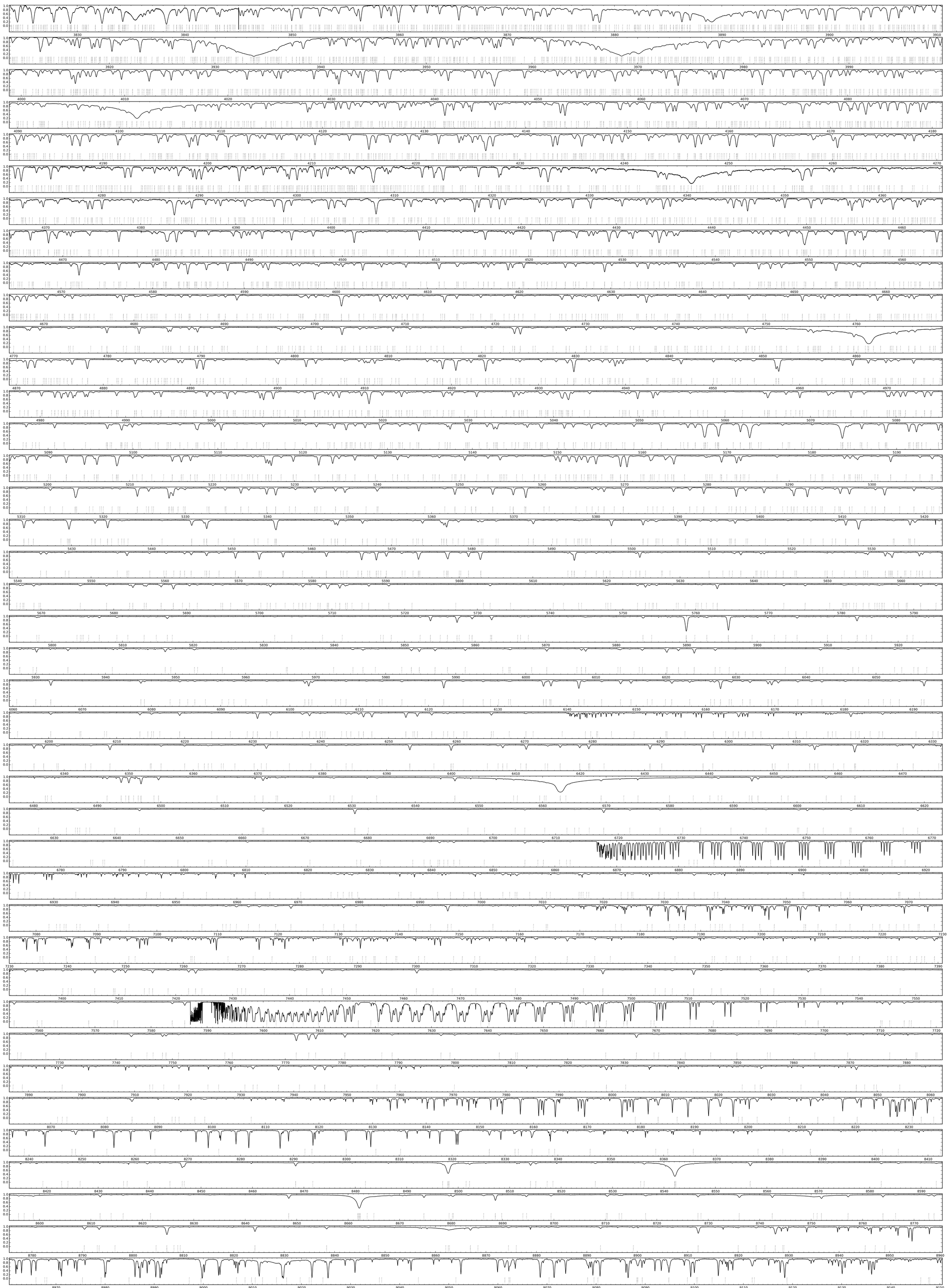
# The fingerprint of a star: σ Boo

σ Boötis (28 Boo = HD 128167) is a F4 dwarf star. Like many of its spectral class, it is apparently a variable of the non-radially-pulsating Delta Scuti variety, which vary subtly with multiple periods of hours. There is, however, no confirmation of the variation, let alone data on it. A relatively modest star, Sigma Boo is only 3.1 times more luminous than our Sun, has a radius 1.2 times solar, and carries just 1.3 times the solar mass. It is approximately 50 light years from the Sun. The star is both low metal (20 percent solar) and relatively young, and possibly near the so-called ZAMS, the "zero-age main sequence" of hydrogen fusing stars. It is a Vega-type star that, even though much cooler than that star, is surrounded by a disk of warm infrared-radiating dust that indirectly implies a possible planetary system, although no planets were found so far. This poster shows the optical spectrum of σ Boo 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 $\lambda$ 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 4 min, and 1 hr with the VATT, and consists of 4-18 exposures in all six cross dispersers. The signal-to-noise ratio (S/N) of the spectrum peaks at 1490:1 at 8250 Å and has a low of 490:1 near the blue cutoff. The LBT exposure was obtained on June 3, 2016, the VATT exposures between April and June, 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/).



Leibniz-Institut für
Astrophysik Potsdam