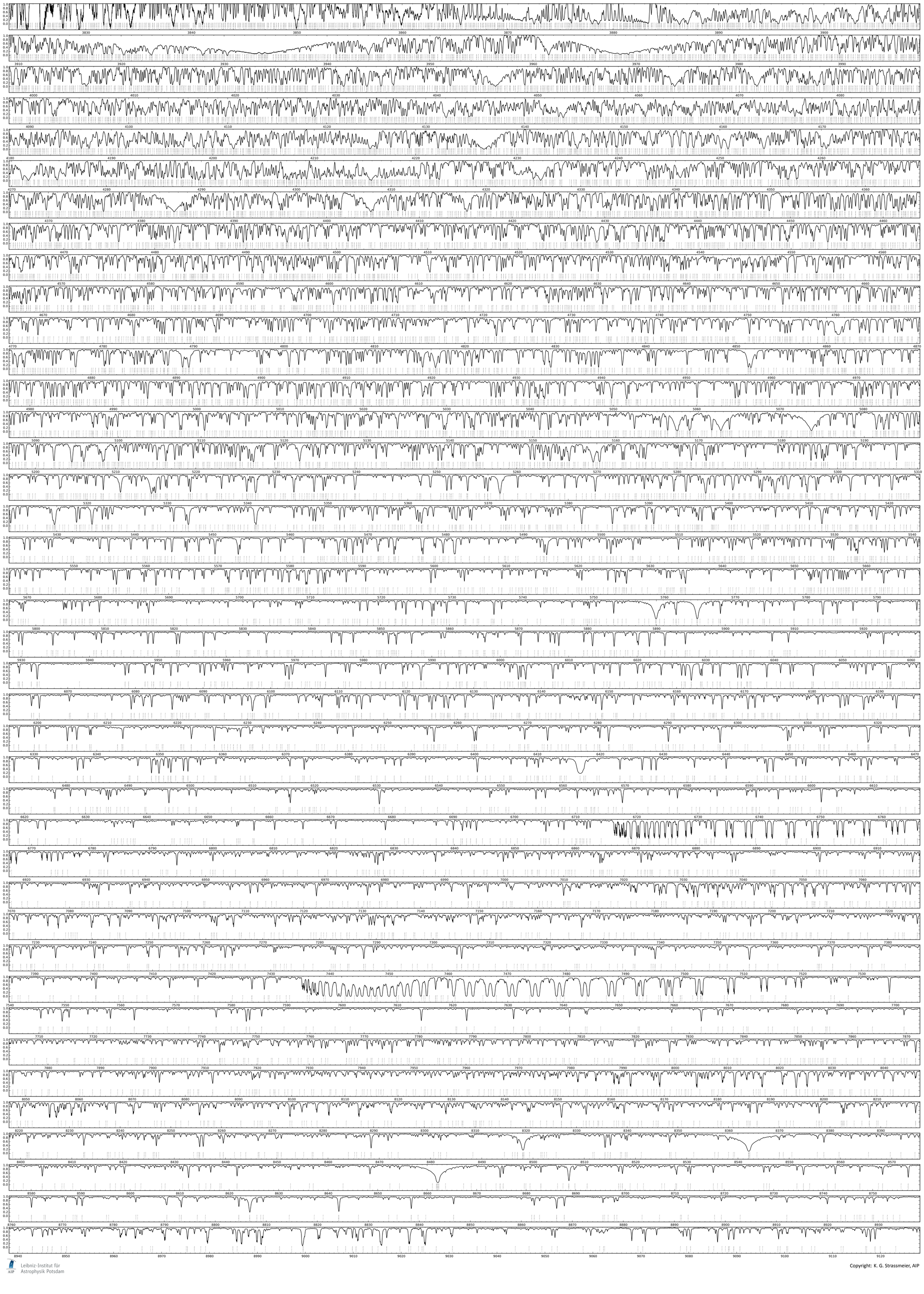
The fingerprint of a star: β Gem

β Geminorum (78 Gem = HD 62509), also known as Pollux, is a K0 giant of class III. This star has served as an anchor point for the classification scheme of stellar spectra. It is just 34 light years away from the Sun and appears to be the brightest star of the constellation Geminorum, brighter than α Gem (named Castor). As a K0III, Pollux has exhausted its hydrogen in the core. It has a projected rotational velocity of just ≈ 2 km·s^{-1}. The abundance of elements other than hydrogen and helium, what astronomers term the star's metallicity, is still somewhat uncertain, but likely higher than the Sun's metal abundance. A magnetic field with a strength below 1 Gauss has been confirmed on the surface of Pollux; one of the weakest fields ever detected on a star. The presence of this field suggests that Pollux was once an Ap star with a much stronger magnetic field. The star displays small amplitude radial velocity variations, but is not photometrically variable. This poster shows the optical spectrum of β Gem 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 5-20 min with the VATT, and involve between 3-11 exposures in all six cross dispersers. The signal-to-noise ratio (S/N) of the spectrum peaks at 2750:1 at 8250 Å and has a low of 400:1 near the blue cutoff. The LBT exposure was obtained on April 8, 2015, the VATT exposures on April 2-8, 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/).



Leibniz-Institut für
Astrophysik Potsdam