



The fingerprint of a star: Kepler-444

Kepler-444 (KOI 3158 = HIP 94931) is a metal-poor K0 dwarf star. The NASA/Kepler spacecraft discovered five transiting planets, all with Sub-Earth radii. Astroseismology and ground-based spectroscopy confirmed an age of 10-11 billion years (approximately 80% of the age of the universe). The chemical composition appears to be more diverse than that of gas-giant hosts, which tend to be metal-rich. This implies that small, including Earth-size, planets may have readily formed at earlier epochs in the Universe's history when metals were more scarce. This poster shows the optical spectrum of Kepler-444 obtained with the Potsdam Echelle Polarimetric and Spectro-

scopic 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 4230 Å (top left) and 9120 Å (bottom right) with an average spectral resolution of $R=\lambda/\Delta\lambda=220,000$ or approximately 1.3 km/s. Its average dispersion is 0.012 Å/pixel. Integration time with the LBT was 6 min and consists of 1-4 exposures in all six cross dispersers. The signal-to-noise ratio (S/N) of the spectrum peaks at 550:1 at 8250 Å and has a low of 150:1 near the blue cutoff. The exposures were obtained on

May 24 and 25, 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* (Mack III, C. E., Strassmeier, K. G., Ilyin, I., Schuler, S. C., Spada, F. & Barnes, S. A. 2018, A&A, **612**, A46; see <https://pepsi.aip.de/>).

