



The fingerprint of a star: HD 49933

HD 49933 = BD-00°1462 is a slightly evolved F4 star classified with a luminosity class of V-IV. The target was one of the best observed stars with the photometric CoRoT mission. Based upon parallax measurements the distance to HD 49933 is about 97 light-years with a 1% margin of error. It is generating energy through the nuclear fusion of hydrogen at its core. It is slightly larger than the Sun, with 108% of the Sun's mass and 139% of the Sun's radius. HD 49933 emits 3.47 times as much energy as the Sun from its outer atmosphere at a higher effective temperature of about 6,600 K. It is estimated to be 2.4 billion years old. The surface magnetic activity on this star is similar to what is observed on the Sun. Magnetic features on the surface have been detected that appear to be

starspots. This poster shows the optical spectrum of HD 49933 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 7-10 min and consists of 1-6 exposures in all six cross dispersers. The signal-to-noise ratio (S/N) of the spectrum peaks at 920:1 at 7000 Å and has a low of 220:1 near the blue cutoff. The exposure was

obtained on April 11 and October 1, 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/>).

