LAMOST-Kepler/K2 survey announces the first light result

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Fig.1 Kepler telescope. Credit: NASA

An international team led by Prof. Fu Jianning and Dr. Zong Weikai from Beijing Normal University released the first light result of medium-resolution spectroscopic observations undertaken by the LAMOST-Kepler/K2 Survey. The study was published in *Astrophysical Journal Supplement* Series on Nov. 12.

The result demonstrated that the medium-resolution spectrographs on LAMOST performed to the designed expectation.

The LAMOST-Kepler/K2 Survey was launched based on the success of the LAMOST-Kepler project, a low-resolution spectroscopic survey that consecutively performed since 2011.

Different from LAMOST-Kepler project, the LAMOST-Kepler/K2 Survey aims to collect time-series spectroscopies with medium resolution on about 55,000 stars distributed on Kepler and K2 campaigns, with higher priority given to the targets with available Kepler photometry.

Each of those input targets will be visited about 60 times during the period from September 2018 to June 2023. This project is allocated with one-sixth of the entire time within the LAMOST medium-resolution observations.

From May 2018 to June 2019, a total of 13 LAMOST-Kepler/K2 Survey footprints have been visited by LAMOST, and obtained about 370,000 high-quality spectra of 28,000 stars.

The internal uncertainties for the effective temperature, surface gravity, metallicity and radial velocity were 80 K,0.08 dex, 0.05 dex and 1km/s when the signal to noise ratio equals to 20, respectively, which suggested that the performance of LAMOST medium-resolution spectrographs meet the designed expectation.

The external comparisons with GAIA and APOGEE showed that LAMOST stellar atmospheric parameters had a good linear relationship, which indicated the quality of LAMOST medium-resolution spectra is reliable.

The LAMOST-Kepler/K2 Survey is the first project dedicated to obtaining time series of spectra by using the LAMOST medium-resolution spectrographs, pointing toward the Kepler/K2 fields. These

spectra will be very important for many scientific goals, including the discovery of new binaries or even the brown dwarfs, the study of oscillation dynamics for large-amplitude pulsators and the investigation of the variability of stellar activity.

More information: Weikai Zong et al. Phase II of the LAMOST-Kepler/K2 Survey. I. Time Series of Medium-resolution Spectroscopic Observations, *The Astrophysical Journal Supplement Series* (2020). DOI: 10.3847/1538-4365/abbb2d