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Title: Stellar Properties of Kepler Targets for the Q1-Q16 Planet Detection Run

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Abstract: We present updated stellar properties for 196468 stars observed by the NASA Kepler Mission through Q16 and used in the Q1-Q16 planet detection run. The catalog is based on a compilation of literature values for atmospheric properties (temperature, surface gravity, and metallicity) derived from different observational techniques (photometry, spectroscopy, asteroseismology, and exoplanet transits), which are then homogeneously fitted to a dense grid of stellar isochrones. We characterize ~11500 targets which were previously unclassified in the Kepler Input Catalog and report the detection of oscillations in ~2700 of these targets, classifying them as giant stars and increasing the number of known oscillating giant stars observed by Kepler by ~20%. A comparison with the Q1-Q12 star properties catalog shows a significant decrease in radii for K-M dwarfs, while radii of F-G dwarfs remain roughly constant, with the exception of newly identified giant stars. The catalog is a first step towards an improved characterization of all Kepler target stars to support planet occurrence studies.

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