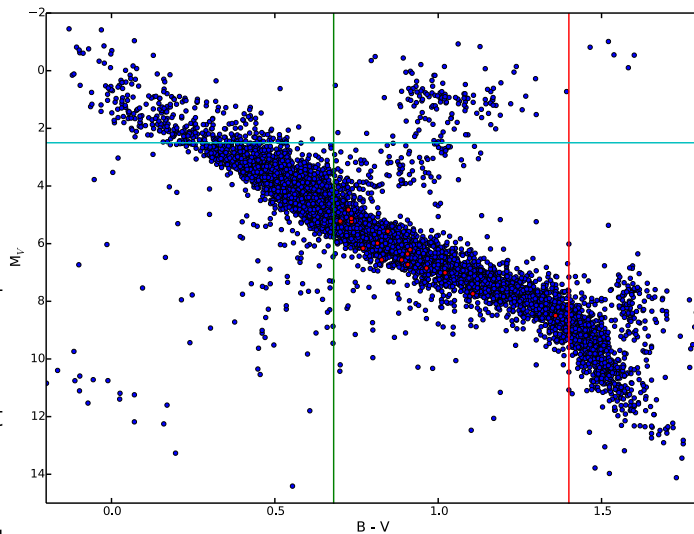


## Characterizing Stellar Parameters and Activity of Late G & K dwarfs with K2

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**Scientific Justification:** The next generation of high resolution spectrometers (ESPRESSO and EXPRES) will deliver an order of magnitude increase in radial velocity precision. However, even the most chromospherically quiet G & K dwarfs exhibit stellar signals on the level of  $1 \text{ m s}^{-1}$ . To take full advantage of the forthcoming  $10 \text{ cm s}^{-1}$  precision for planet detection, we need tools to disentangle signals induced by orbiting planets from the signals intrinsic to the stars, particularly those caused by stellar activity. Here we propose 17 late G and K dwarfs in the Kepler 2 Campaign 0 field of view to be added to the target list. Short cadence observations, combined with high resolution spectra taken throughout the campaign, will provide a rich data set for obtaining accurate stellar parameters and exploring tools to characterize intrinsic radial velocity signals. In particular, short cadence observations will allow for precise determinations of the stellar radii, masses and ages. Furthermore, variability in the Kepler photometry will serve as an additional indicator of stellar activity and allow us to determine rotational periods for the more active stars in our sample.

**Target List:** We propose to add 17 late G & K dwarfs from the *Hipparcos* catalog to the K2 Campaign 0 short cadence target list. Cuts were placed on our sample to include only stars that have  $V < 10$ ,  $B-V > 0.68$  (G5) and  $B-V < 1.4$  (M0). Our sample was further constrained to include only stars with  $M_V > 2.5$  to exclude most evolved stars within our color cut. The resulting list was vetted to remove spectroscopic binaries and



subgiants since precise radial velocity measurements cannot be obtained for those objects. Targets proposed here are the red points in the included HR diagram. Blue points are the remainder of stars within 50 pc of the Sun from the *Hipparcos* catalog. Interferometric measurements of the stars in our sample will be taken using the CHARA array. We also intend to take high resolution spectra throughout the campaign for precise radial velocity measurements and stellar activity analysis.  $\text{Log}(R'_{\text{HK}})$  measurements are known for at least some of the proposed targets and indicate that at least some of these targets are known to be magnetically active. The final list of targets has been sorted in the order of target priority, with highest priority targets at the top of the list.