Understanding the Parameter Space of Keplerian Orbits in APOGEE

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The APO Galactic Evolution Experiment (APOGEE-1) survey took high-resolution H-Band spectroscopy of 146,000 stars (as of Data Release 12). Of these, 14,840 stars had at least 8 radial velocity (RV) epochs with baselines up to 3 years (~1000 days) making them suitable for orbit fitting. In Troup et al. (2016), 382 of the 14,840 orbits were selected as a gold sample of stars with well-characterized orbits. In this talk, we will discuss our current effort to understand the efficiency of our Keplerian orbit fitting software from the Troup et al paper. In particular, we will analyze a mock catalog of RV curves, and see how well we reproduce their orbital parameters. Knowing the distribution of parameter errors is crucial for using this data set to understand the binary and brown dwarf populations of the Milky Way galaxy. We will also address plans for improving these orbital fits.