Name: Travis Metcalfe
Email: travis@spsci.org
Institution: Space Science Institute
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Abstract: The transit of an exoplanet across the visible disk of its host star produces a photometric signal that contains information about the size of the planet relative to the size of the star. To obtain the absolute radius of the exoplanet, a precise estimate of the stellar radius is required. Short cadence (1-minute sampling) Kepler observations are capable of revealing solar-like oscillations in the host star, providing a means for estimating a precise stellar radius and other characteristics of the system. For brighter stars and longer time-series, solar-like oscillations are resolved into individual frequencies that can substantially improve the asteroseismic estimates of radius, mass and age through detailed modeling. We have developed an automated stellar model-fitting pipeline for the solar-like oscillations observed by Kepler, which is available through the Asteroseismic Modeling Portal (AMP, http://amp.phys.au.dk/). Taking the individual oscillation frequencies and other observational constraints as input, the pipeline uses a parallel genetic algorithm to derive the optimal stellar radius, mass, age and composition. I will present the first results from applying AMP to a sample of 30 bright exoplanet host stars, and a control sample of stars without transiting planets for comparison. In many cases, AMP yields the asteroseismic radius, mass and age with an internal precision near 1%. The absolute accuracy has been demonstrated to be near 2% for the radius and mass, and around 15% for the age, providing strong constraints on the characteristics of the associated planetary systems.