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Title: Another Piece of the eta_Earth Puzzle: The Issue of Completeness
Type: Invited Talk
Session: Exoplanet Statistics, False Positives, and Completeness Corrections
Abstract: The primary goal of the Kepler Extended Mission is to measure eta_Earth, the frequency of Earth-size planets in the habitable zone of Sun-like stars. The mission expects to detect a relatively small number of true Earth-analogs, which will display only a few, shallow, transit events. In this regime, the corrections for completeness in the planet sample may be large—for instance, missing a small number of transits will have a large impact on, and will dominate the uncertainty in, the derived value for eta_Earth. In this talk we discuss the origins of incompleteness in the Kepler planet candidate sample, from the original signal detection, through the gamut of signal tests that are performed by the pipeline, to the vetting of surviving signals into planet candidates, both by human vetters and auto-vetting algorithms. We describe the ongoing efforts to measure the incompleteness and lay out the proposed path forward.