SLAC COLLOQUIUM SERIES

Exoplanet frontiers: Kepler & the next decade of NASA exploration

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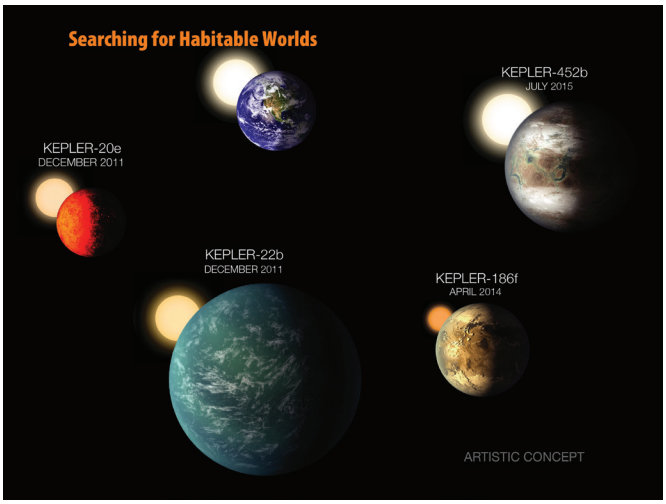
Abstract:
On the eve of Kepler's launch in 2009, astronomers knew of a few hundred planets orbiting other stars in the Milky Way. Today, the discoveries spill into the thousands, and the sensitivity boundaries continue to expand. NASA's Kepler Mission unveiled a galaxy replete with small planets and revealed populations that don't exist in our own solar system. The final discovery catalog was delivered in the autumn of 2017 together with the survey completeness and reliability metrics required for studying exoplanet demographics as a function of size, orbital period, and host star properties. To date, we've learned that every late-type star has at least one planet, that terrestrial-sized planets are more common than larger planets within 1 AU, and that the nearest, potentially habitable earth-sized planet is likely within 5 pc. This knowledge has catalyzed a 30-year roadmap for NASA exoplanet exploration with the ultimate goal being the search for evidence of life beyond the Solar System. The launch of the Transiting Exoplanet Survey Satellite (TESS) this year and the James Webb Space Telescope (JWST) in 2021 will take us one step closer. As our collective effort shifts from Kepler to these new capabilities, the coming decade will shift from the study of exoplanet demographics to the characterization of exoplanet atmospheres.



October 8, 2018, Kavli Auditorium, Refreshments and Colloquium Start at 3:00 pm