

Name: Siddharth Hegde
Email: hegde@mpia.de
Institution: Max Planck Institute for Astronomy
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Abstract: Authors: Siddharth Hegde and Lisa Kaltenegger

Abstract: The search for extrasolar planets has already detected rocky planets and several planetary candidates with minimum masses that are consistent with rocky planets in the habitable zone of their host stars. A low-resolution spectrum in the form of a color-color diagram of an exoplanet is likely to be one of the first post-detection quantities to be measured for the case of direct detection. In this talk, we explore potentially detectable surface features on rocky exoplanets and their connection to, and importance as, a habitat for extremophiles, as known on Earth. Extremophiles provide us with the minimum known envelope of environmental limits for life on our planet. The color of a planet reveals information on its properties, especially for surface features of rocky planets with clear atmospheres. We use filter photometry in the visible as a first step in the characterization of rocky exoplanets to prioritize targets for follow-up spectroscopy. Many surface environments on Earth have characteristic albedos and occupy a different color space in the visible waveband (0.4–0.9 microns) that can be distinguished remotely. These detectable surface features can be linked to the extreme niches that support extremophiles on Earth and provide a link between geomicrobiology and observational astronomy. This talk explores how filter photometry can serve as a first step in characterizing Earth-like exoplanets for an aerobic as well as an anaerobic atmosphere through geological time-scales, thereby prioritizing targets to search for atmospheric biosignatures.