

Thermal IR ELT opportunity: finding and characterizing other worlds around the nearest stars with METIS

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Abstract

The next generation ground-based extremely large telescopes (ELTs) present incredible opportunities to discover and characterize diverse planetary systems, even potentially habitable worlds. Adaptive-optics assisted thermal-IR (3-14 μm) imaging is a powerful tool to study exoplanets with extant 6-12 meter telescopes. ELTs have the spatial resolution and sensitivity that offer an unparalleled expansion of the available discovery space. AO-assisted thermal-IR instruments on ELTs will be superior to JWST for high contrast imaging in the thermal-IR, and complementary to high contrast observations at shorter wavelengths, in space or with second-generation extreme AO instruments [1]. We will describe the capabilities of the METIS instrument being designed as one of the first three instruments for the ESO 39 meter ELT [2] and discuss the plans, and prospects, to detect and characterize small rocky planets surrounding stars in the immediate vicinity of our Sun [3].

References

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- [2] Brandl, B. R., Absil, O., Agócs, T., et al. 2018, Ground-based and Airborne Instrumentation for Astronomy VII, 10702, 107021U
- [3] Quanz, S. P., Crossfield, I., Meyer, M. R., Schmalzl, E., & Held, J. 2015, International Journal of Astrobiology, 14, 279