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Title: Implications of the value of η_earth for the choice of a spectroscopic mission - visible or thermal
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Abstract: Future Exoplanet Telescopes and Instrumentation

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The present Holy Grail of exoplanetary science is the search for biosignatures on habitable planets. At least two approaches are possible for that, the spectroscopic search for O2 and H2O with a monolithic telescope and a coronograph in the visible, and the search for O3, CO2, and (H2O) with a multi-mirror interferometer in the thermal IR.
We have built a simple model to estimate the number of planets that can be studied by each type of instrument for different values of their characteristic parameters as: diameter of the mirror(s), Inner Working Angle for coronograph, relevant spectral resolution, and η_earth, the mean number of terrestrial planets (1.0 to 2.0 R_earth) in the Habitable Zone of the host star. As a matter of fact, the determination of the latter is the major goal of Kepler .
We find that the two techniques are not on equal terms to face a possible low value of η_earth. More exhaustively, we provide the planet number for each instrument for sizes that seems affordable in the mid- future, as a function of η_earth.