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Infrared observations of primary transits

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Extrasolar Giant planets (EGPs) are now being discovered at an accelerating pace. In particular, extrasolar planets that transit their parent stars, since they offer a unique opportunity to directly estimate their key physical parameters, and probe their atmospheres. The numerous follow up observations of the most well studied transiting planets, include the detection and upper limits of absorption features in the deeper atmosphere and escaping process in the upper atmosphere. The thermal emission of TrES-1 in the 4.5 and 8 μm was detected through observations of secondary eclipses (when the planet transits behind its parent star) of TrES-1, HD209458b and HD189733b using the Spitzer space telescope. This observation gave preliminary estimate of effective temperature, bond albedo and CO abundance.

We will discuss observations of primary transits (when the planet transits its parent star) and their potential in probing the atmosphere composition. We will also present Spitzer observations, and discuss some systematic effects that could be plaguing such measurements and how to control them.