

## 401 Justification: Exoplanet

When a star begins to form, it forms a protoplanetary disk around itself. Inside this disk is where larger objects begin to accrete dust and other smaller objects or gasses, and these are the beginnings of the new planets in this system. We observe this star but the planets are harder to detect. Relying on the star's light, planets can be detected by analysis of light curves where there is a dip in the flux received from the star in question. In these transit events we can also find out the atmospheric composition of planets, which help us determine whether life could be supported there or not.

A popular search for exoplanets is finding habitable worlds inside the habitable zone. Studies of the solar neighborhood have revealed that M dwarfs are 12 times more abundant than G dwarfs. The abundance of M dwarfs, combined with growing evidence for an increase in the planet occurrence rate at decreasing stellar temperatures implies that the majority of small planets may be located around the coolest stars (Dressing and Charbonneau, 2013). There are some difficulties here though because the planet could be subject to strong flares and high UV emission.

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