



## **Toward other Earths**

Artie P. Hatzes

Thueringer Landessternwarte Tautenburg

How common are habitable Earth-like planets? This is a key question that drives much of current research in exoplanets. To date, we have discovered over one thousand exoplanets, mostly through the transit method. Among these are Earth-size planets, but these orbit very close to the star (semi-major axis approximately 0.01 Astronomical Units). Potentially rocky planets have also been discovered in a star's habitable zone, but these have approximately twice the radius of the Earth. These certainly do not qualify as Earth "twins". Several hundreds of multi-planet systems have also been discovered, but these are mostly ultra-compact systems with up to seven planets all with orbital distances less than that of Mercury in our solar system. The detection of a planetary system that is the direct analog of our solar system still eludes us.

After an overview of the current status of exoplanet discoveries I will discuss the prospects and challenges of finding such Earth analogs from the ground and from future space missions like PLATO.

After over two decades of searching, we may well be on the brink of finding other Earths.