

Searching for Earth-like Planets in the Infrared with Interferometry: Using Astronomer's New "Microscope on the Sky"

ABSTRACT

Earth-like planets orbiting nearby stars are expected to radiate most strongly at infrared wavelengths from around 8 to 13 microns, the so-called thermal infrared region of the electromagnetic spectrum. In the past few years astronomers have developed new techniques for detecting Earth-like planets around nearby stars using stellar interferometry. Interferometry is a technique whereby signals are combined from multiple telescopes so that the ensemble acts like one giant telescope of a size equal to the largest separation between them. The United States and Europe are developing space missions to search for these planets within the next ten to twenty years. The US mission called the Terrestrial Planet Finder (TPF) has become a key component of NASA's implementation of the President's Vision for Space Exploration, and the European mission, Darwin, is a key element of their upcoming Cosmic Vision program. I will also report progress on the development of these missions from my perspective on the US and European science working groups.