

Space Telescope Science Institute

Award Abstract — #HST-EO-10869

**Exploring Light and Planetary Atmospheres Through the Eyes of the Hubble
Space Telescope**

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Abstract The discovery over the past decade of over 100 planets orbiting stars other than our Sun has revolutionized the field of studies of extrasolar planets. Most discoveries have been made by measuring the variable Doppler shift of the parent star spectrum caused by the gravitational pull of the planet as it orbits around the star. Another method of study has been provided by planets with orbits inclined so that the planet transits in front of the star. When these planets cross the stellar disk they obscure part of it according to their sizes, and this has shown that these planets are giant Jupiter-size type planets. HST was the first telescope to detect additional obscuration during the transits, at certain wavelengths, providing the first detection of the atmosphere of an extrasolar planet. The transiting planets discovered so far are called "hot-Jupiters" because they are very close to their parent stars, just about 10 stellar radii away. One key HST finding has been that the upper atmosphere of the best studied "hot-Jupiter" is highly inflated and undergoes strong escape, somewhat like gases escape in a comet, but quite different than in the atmospheres of the planets of our Solar System. New HST observations of another "hot-Jupiter" are underway which will provide new information for our understanding of these systems.