

SOFIA Science Lunch Talk

Date: Monday April 26, 2004

Speaker: Tim Castellano, NASA Ames

Title: Tranistsearch: A Collaboration with Amateur Astronomers to Discover Transiting Extrasolar Planets

Abstract:

The discovery of more than 100 planets around nearby solar-like stars that surpass Jupiter in size yet orbit their stars more quickly than Mercury has heralded a new era in astronomy. These enigmatic "Hot-Jupiters" are large enough and close enough to their parent stars that their "transits" can be captured by astronomers equipped with a small computer controlled telescope and a quality electronic CCD camera. The first known transiting extrasolar planet HD 209458b, in the constellation Pegasus, has been the subject of hundreds of scientific papers since its discovery in 1999. The transit of 8th magnitude HD 209458 has been observed by at least a dozen non-professional astronomers using telescopes as small as 4 inches in aperture. Using equipment already in hand, and armed with target lists, transit time predictions, observing techniques and software procedures developed by the *transitsearch*, collaboration non-professional astronomers can contribute significantly to the study of extrasolar planets by carefully measuring the brightness of stars with known Hot-Jupiters. In this way, amateur astronomers may resume, after a two century interruption, the tradition of planetary discoveries begun with William Herschel's 1787 discovery of the "solar" planet Uranus.

To date, *transitsearch* has amassed more than 50 interested observers in 10 states and 12 countries and provided research experience for undergraduate and graduate students from California, Washington, Michigan and North Carolina. A status report on the successes and challenges of a highly collaborative yet widely distributed project with participants of varying background and equipment levels will be discussed.

Exciting upcoming opportunities for *transitsearch* observers to compete for time on NASA's SOFIA aircraft as outreach partners will be discussed and plans for this summer's observing campaign to expand our network of qualified observers through additional measurements of HD 209458b and hands-on workshops will be outlined.