Abstract. We discuss preliminary results from our first search campaign for transiting planets performed using Sleuth, an automated 10 cm telescope with a 6 degree square field of view. We monitored a field in Hercules for 40 clear nights between UT 2003 May 10 and July 01, and obtained an rms precision (per 15-min average) over the entire data set of better than 1% on the brightest 2026 stars, and better than 1.5% on the brightest 3865 stars. We identified no strong candidates in the Hercules field. We conducted a blind test of our ability to recover transiting systems by injecting signals into our data and measuring the recovery rate as a function of transit depth and orbital period. About 85% of transit signals with a depth of 0.02 mag were recovered. However, only 50% of transit signals with a depth of 0.01 mag were recovered. We expect that the number of stars for which we can search for transiting planets will increase substantially for our current field in Andromeda, due to the lower Galactic latitude of the field.

First Results From Sleuth: The Palomar Planet Finder

Francis T. O’Donovan
David Charbonneau
Lewis Kotredes

I ACQUISITION AND ANALYSIS OF SLEUTH OBSERVATIONS

Sleuth\(^1\), located at Palomar Observatory in Southern California, is the third transit-search telescope in our network which comprises STARE\(^2\) (PI: T. Brown, located in Tenerife), and PSST (PI: E. Dunham, located in northern Arizona). Sleuth is an f/2.8 lens with a 10 cm aperture that images a 6\(^\circ\) \times 6\(^\circ\) field of view onto a 2048 \times 2048 back-illuminated CCD camera. Sleuth conducts nightly observations with an SDSS r’ filter, but also gathers color images in g’, i’ & z’ during new moon. Sleuth automatically adjusts the focus for changes in temperature and filter. A separate f/6.3 lens feeds the guide camera. The automated observations, including operation of the clamshell enclosure, are controlled by a workstation running Linux. In the event of threatening weather, the on-site night assistant for the 200” telescope can close the system remotely, and an observatory weather station provides additional protection. At dawn, the night’s data are automatically compressed and sent by ftp to our workstation at Caltech.

Between UT 2003 May 10 and July 01, we monitored approximately 10,000 stars (9 < R < 16) in a field in Hercules. Figure ?? shows the calculated rms