

Astrometric Masses of Extrasolar Planets and Brown Dwarfs

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Scientific Category: COOL STARS

Scientific Keywords: ASTROMETRY, EXTRA-SOLAR PLANETS, MAIN SEQUENCE STARS

Instruments: FGS

Proprietary Period: 12

	3 Gyro Mode Orbit Request		2 Gyro Mode Orbit Request	
	Prime	Parallel	Prime	Parallel
Cycle 14	72	0	72	0
Cycle 15	36	0	36	0
Total	108	0	108	0

Abstract

We propose observations with HST/FGS to estimate the astrometric elements (perturbation orbit semi-major axis and inclination) of extra-solar planets orbiting six stars. These companions were originally detected by radial velocity techniques. We have demonstrated that FGS astrometry of even a short segment of reflex motion, when combined with extensive radial velocity information, can yield useful inclination information (McArthur et al. 2004), allowing us to determine companion masses.

Extrasolar planet masses assist in two ongoing research frontiers. First, they provide useful boundary conditions for models of planetary formation and evolution of planetary systems. Second, knowing that a star in fact has a planetary mass companion, increases the value of that system to future extrasolar planet observation missions such as SIM PlanetQuest, TPF, and GAIA.

Investigators:

	Investigator	Institution	Country
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CoI	Dr. Thomas Harrison	New Mexico State University	USA/NM
CoI	Dr. Richard J. Patterson	The University of Virginia	USA/VA

Number of investigators: 9

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Target Summary:

Target	RA	Dec	Magnitude
HD47536	06 37 47.6189	-32 20 23.04	V = 5.26 +/- 0.01
HD136118	15 18 55.4719	-01 35 32.59	V = 6.94 +/- 0.02
HD168443	18 20 3.9316	-09 35 44.60	V = 6.92 +/- 0.02
HD145675	16 10 24.3143	+43 49 3.52	V = 6.67 +/- 0.02
HD38529	05 46 34.9120	+01 10 5.50	V = 5.94 +/- 0.02
HD33636	05 11 46.4490	+04 24 12.74	V = 7.06 +/- 0.02

Observing Summary:

Target	Config Mode and Spectral Elements	Flags	Orbits
HD47536	FGS POS F5ND		18
HD136118	FGS POS F5ND		18
HD168443	FGS POS F5ND		18
HD145675	FGS POS F5ND		18
HD38529	FGS POS F5ND		18

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Target	Config Mode and Spectral Elements	Flags	Orbits
HD33636	FGS POS F5ND		18
		Total orbit request:	108