Recent Results and Future Improvements of OHP 193-cm Telescope with SOPHIE

Michel BOER [OHP]
Francois BOUCHY [IAP/OHP]

1.93-m telescope

SOPHIE : high precision echelle spectrograph

CARELEC : long-slit low-res. Spectrograph

Others (users): MEFOS, GHASP

Pressure factor ~ 2

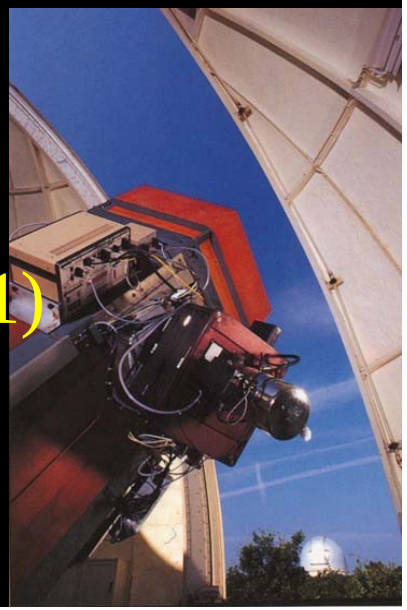
1.52-m telescope

AURELIE : medium and high-res. Spectrograph

ELPOA: Laser Guide star R&T project (2010-11)

1.20-m telescope

CCD camera: photometry



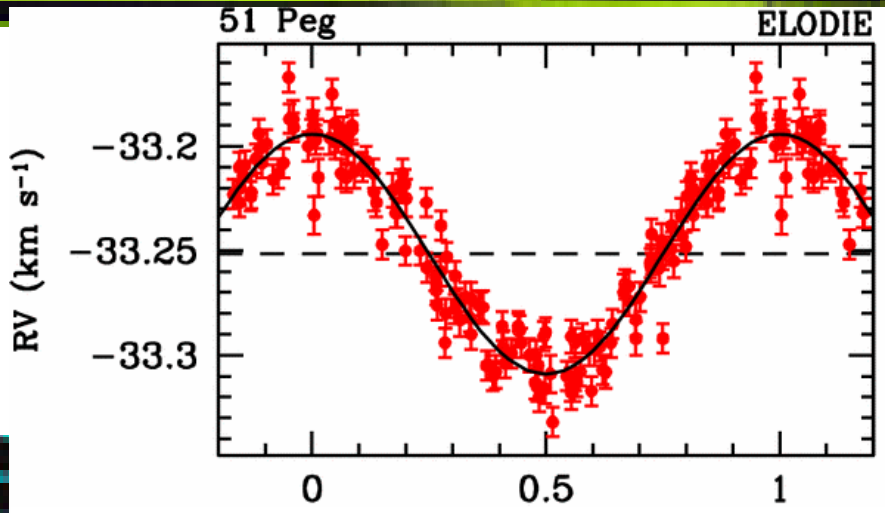
193cm telescope: CARELEC Spectrograph: 1986 -

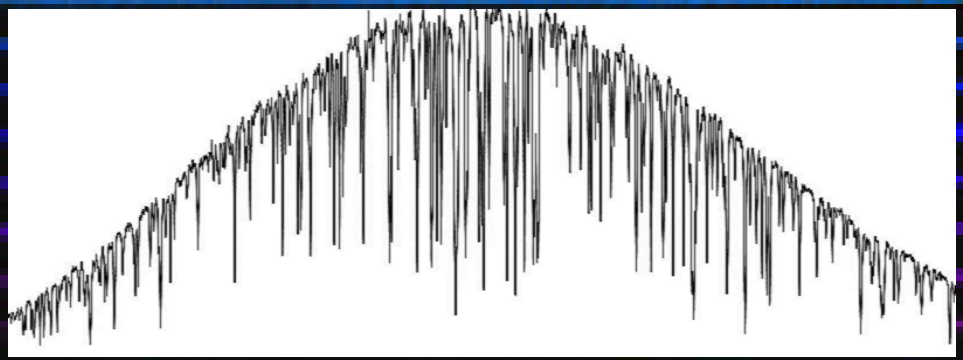
Long-slit spectrographe (5 arc-min) for faint objects

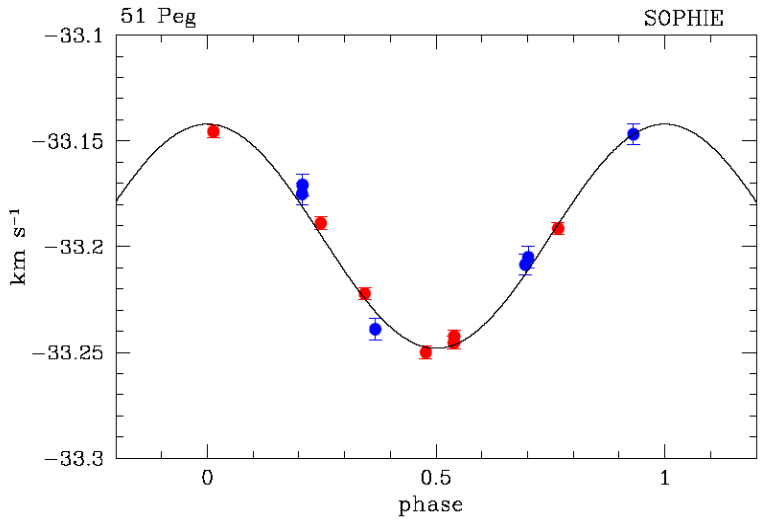
- Galaxy velocities
- Identification of X-ray and IR sources
- Follow-up of SNs
- AGNs
- Planetary Nebulae
- H II regions
- Binaries

high-precision RV spectrograph

- Replaces ELODIE (1995-2006)
- Commissioned since Nov 2006
- Res. = 70’000 - $\Delta\lambda$= 380-680 nm
- RV precision 3-4 m/s
- Half-time dedicated to exoplanets

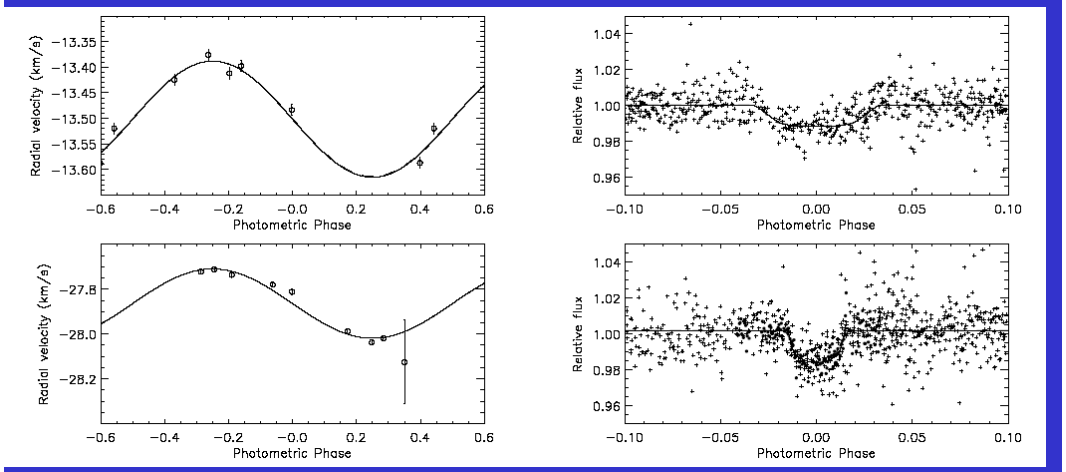




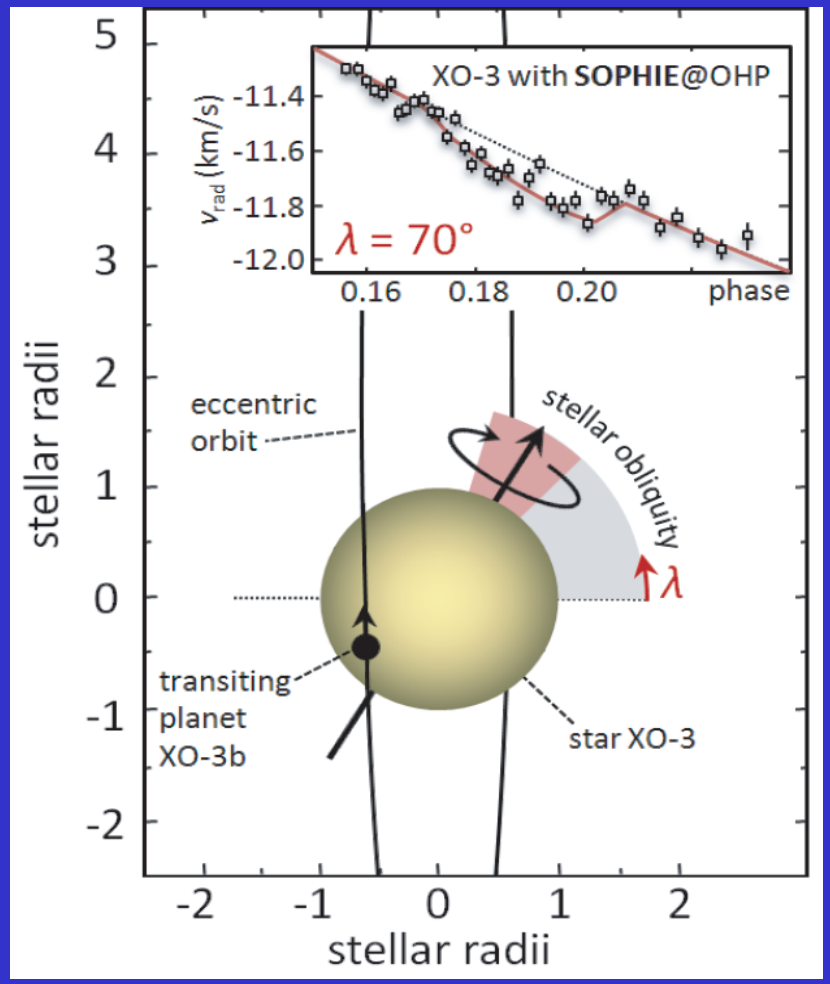


SOPHIE Results in exoplanetology

17 papers since 2007
16 exoplanets



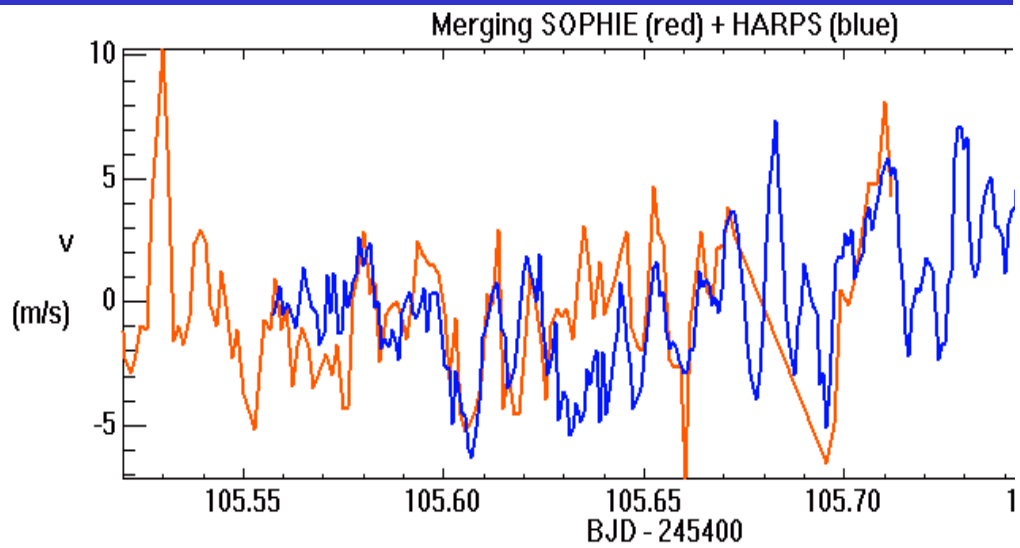
WASP-1b and WASP-2b : two new transiting exoplanets detected with SuperWASP and SOPHIE (Cameron et al. 2007)

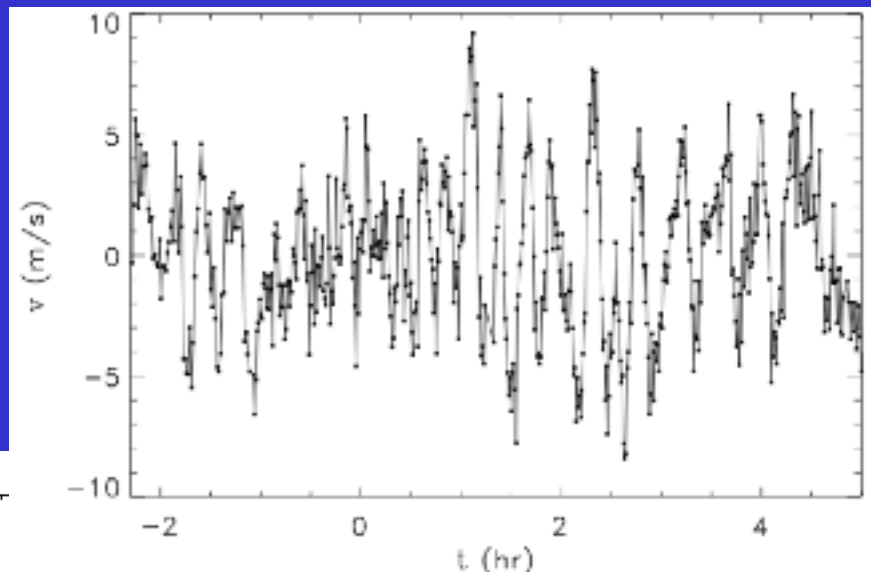


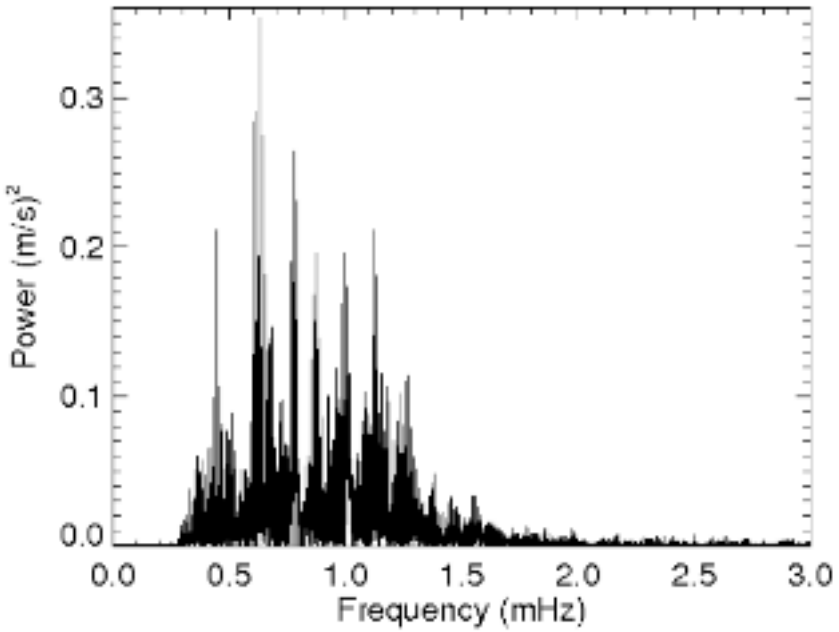
Misaligned spin-orbit in the X0-3 planetary system ?
(Hébrard et al. 2008)

SOPHIE Results in stellar physics

8 papers since 2007



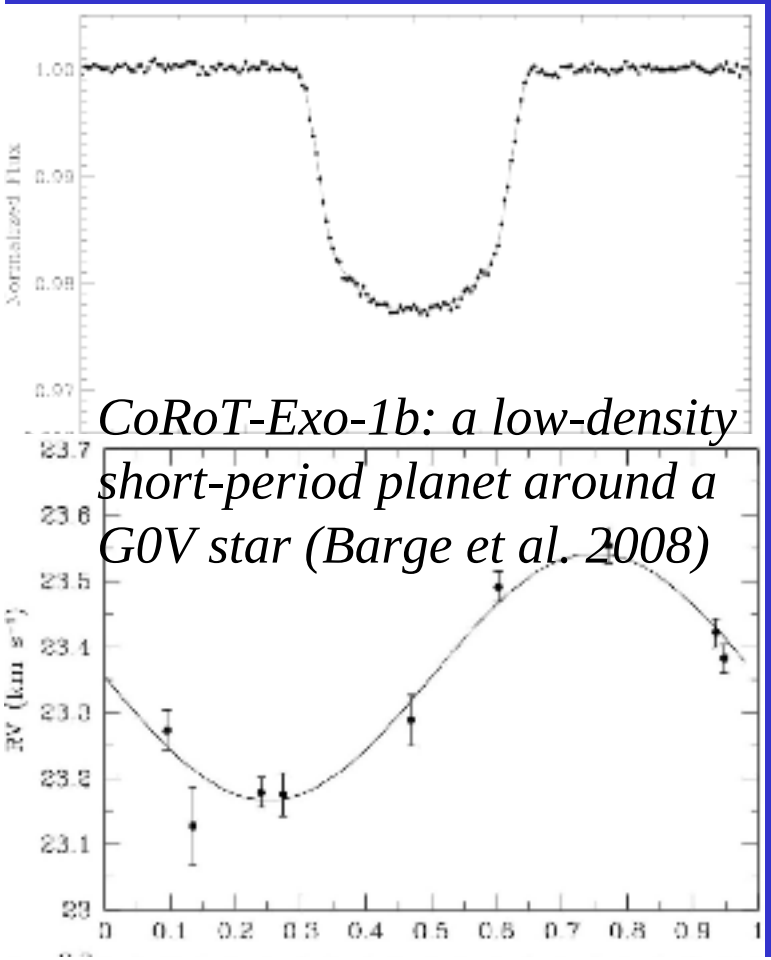




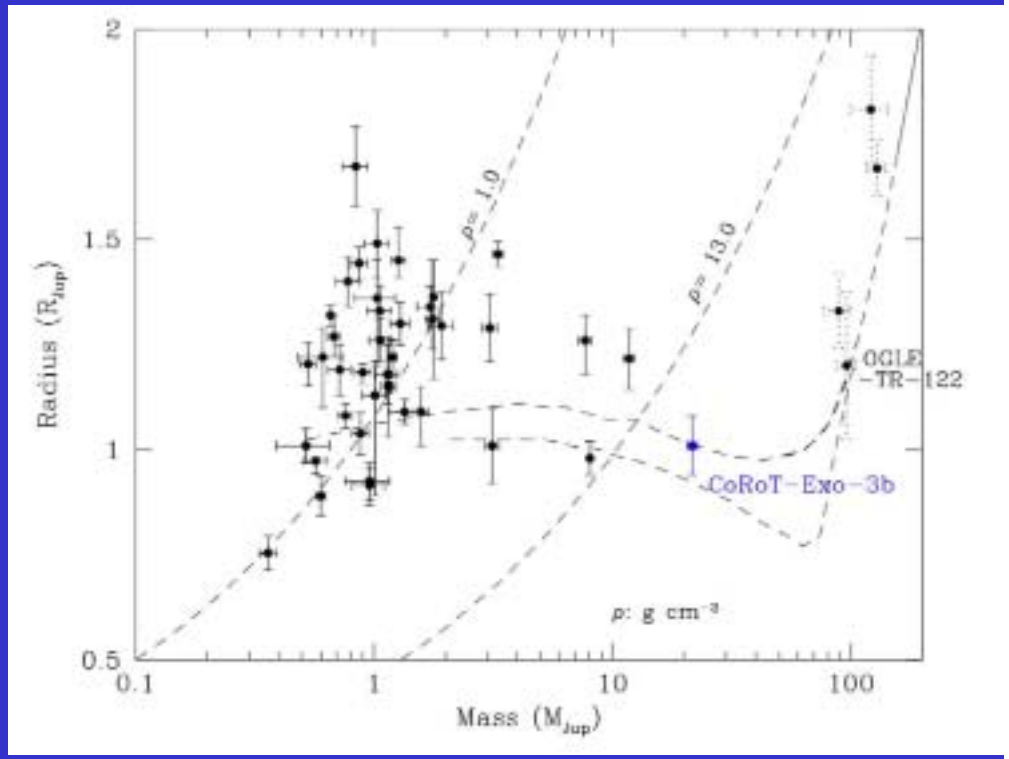
Asteroseismology of Procyon with SOPHIE (Mosser et al., 2008)

A key element for the space mission CoRoT

6 papers since 2007



CoRoT-Exo-1b: a low-density short-period planet around a G0V star (Barge et al. 2008)



CoRoT-Exo-3b: The fisr secure inhabitant of the brown-dwarf desert (Deleuil et al. 2008)

Perspectives and goals for SOPHIE

- Search for Super-Earth exoplanets in the North Hemisphere (HARPS find that 30% of solar-type stars have a low-mass exoplanet)

- Search for long-period exoplanets [1994 - 2014]
  -Thanks to the unprecedented large time base at OHP

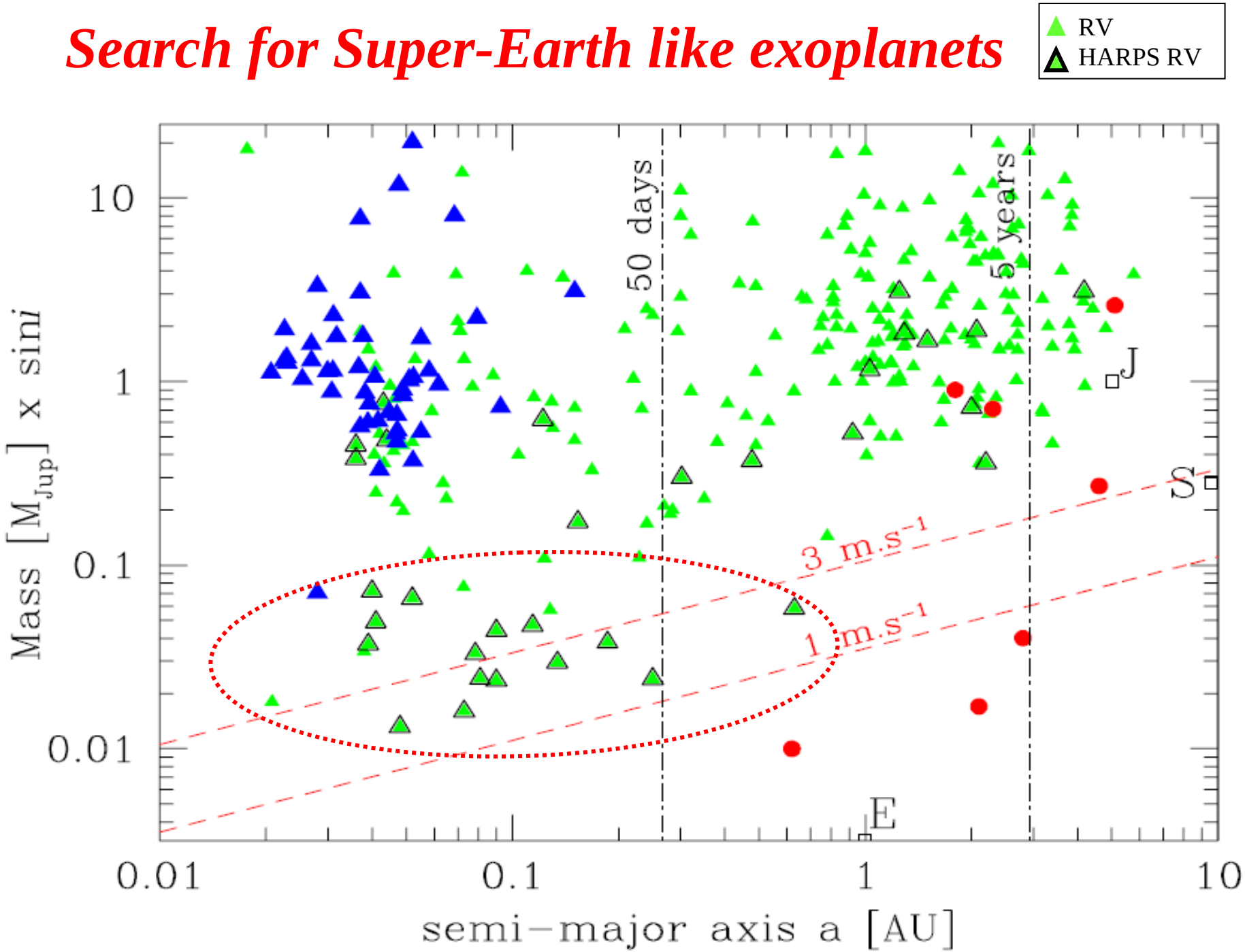
- Doppler Asteroseismology

- Follow-up CoRoT and Kepler (and Plato ?)

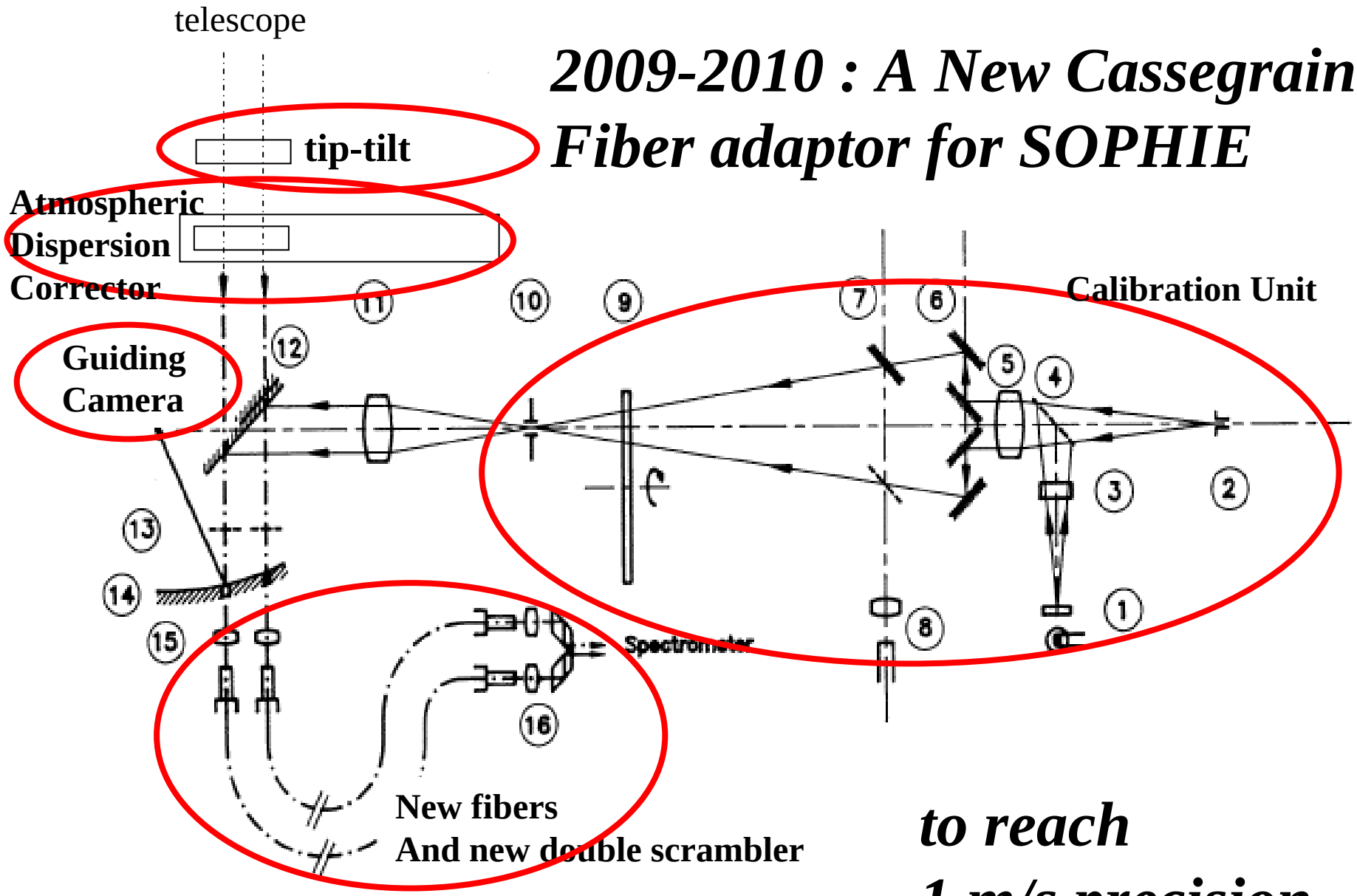
- Bench test for Expresso (VLT-2), SPIROU (CFHT) and Codex (ELT)

- Follow-up GAIA

Search for Super-Earth like exoplanets

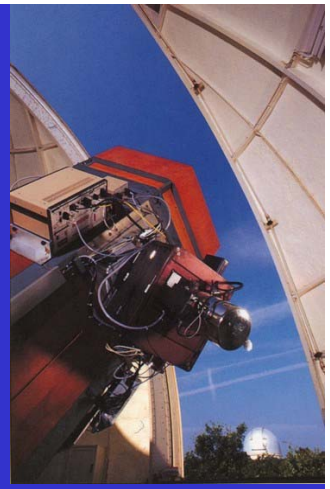


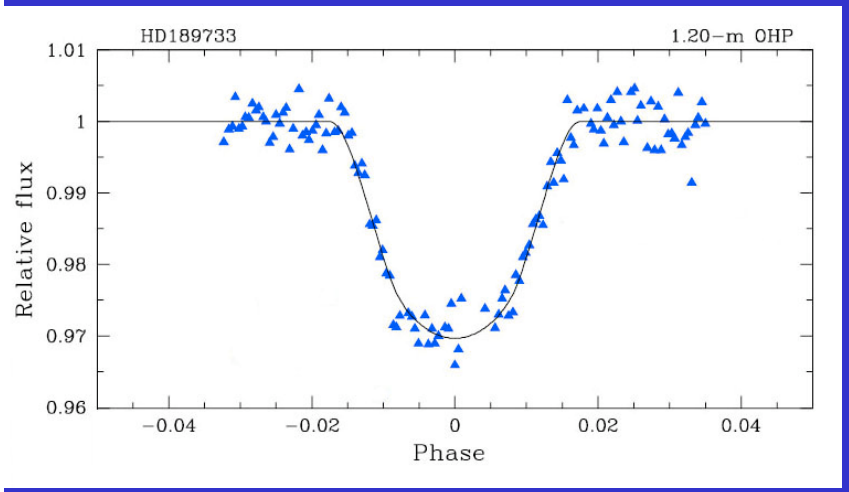
2009-2010 : A New Cassegrain Fiber adaptor for SOPHIE



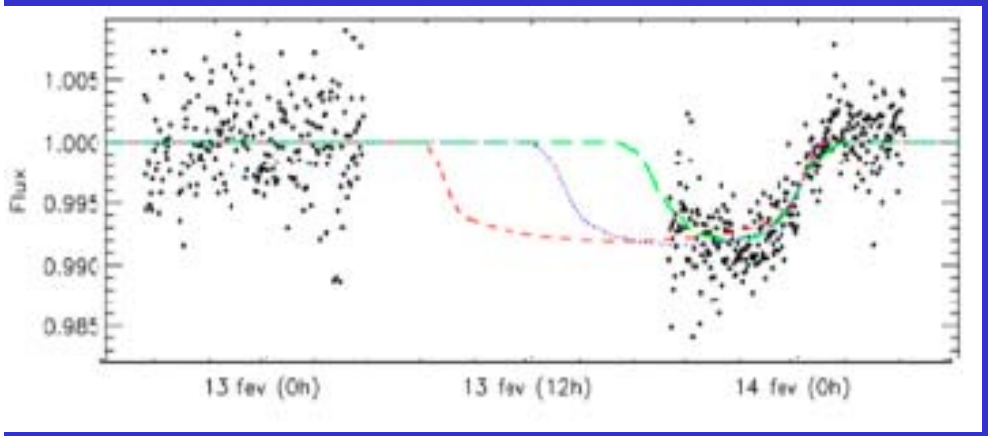
to reach
1 m/s precision

The OHP 193/120 connection: Photometric observations of transiting exoplanets





Detection of the transiting Hot-Jupiter orbiting the bright star HD189733
Bouchy et al. 2005



Detection of the primary transit of the 111-day-period exoplanet orbiting the bright star HD80606
Moutou et al. 2005