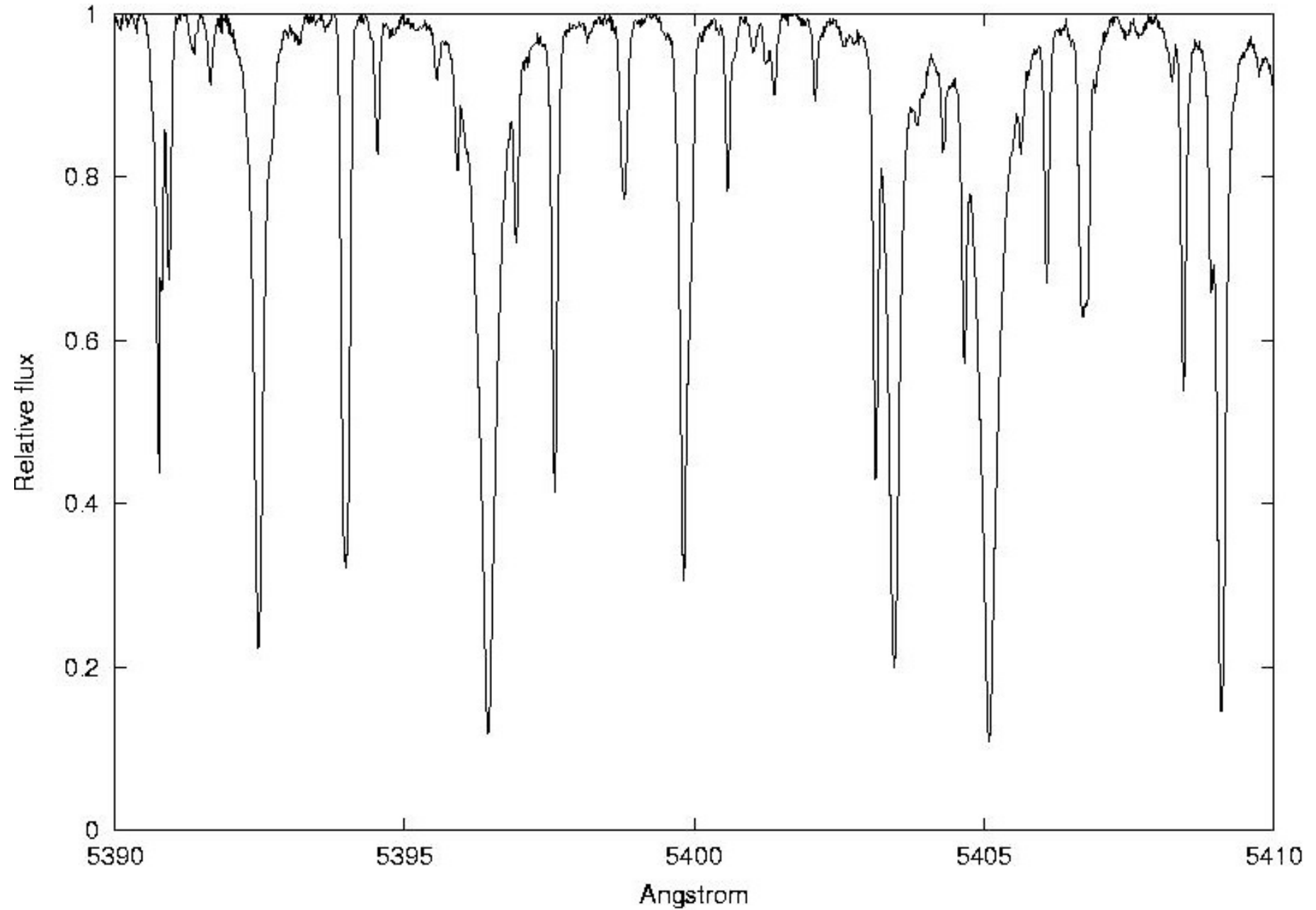
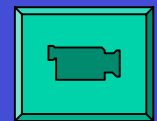
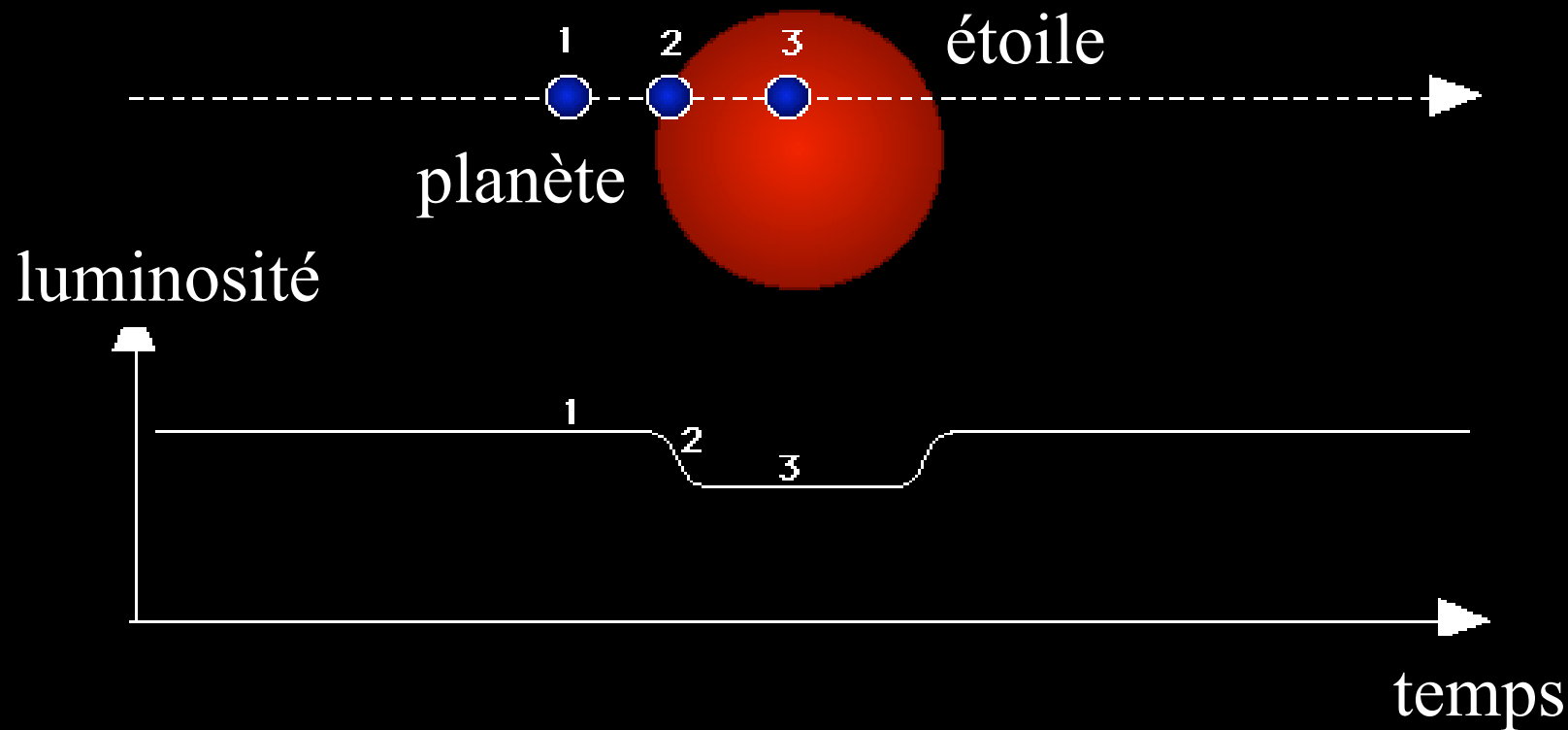
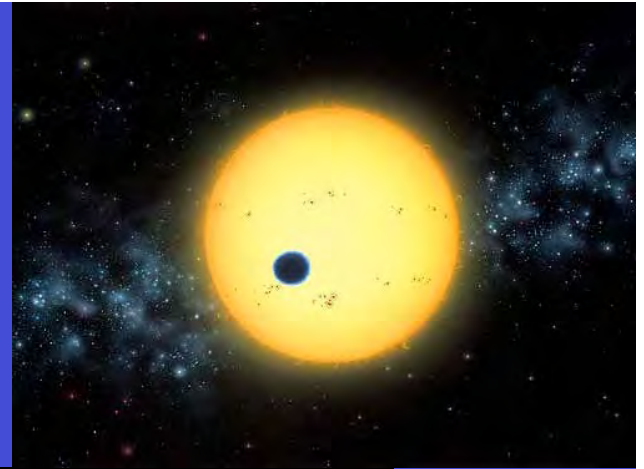




Portion de spectre stellaire obtenu avec HARPS



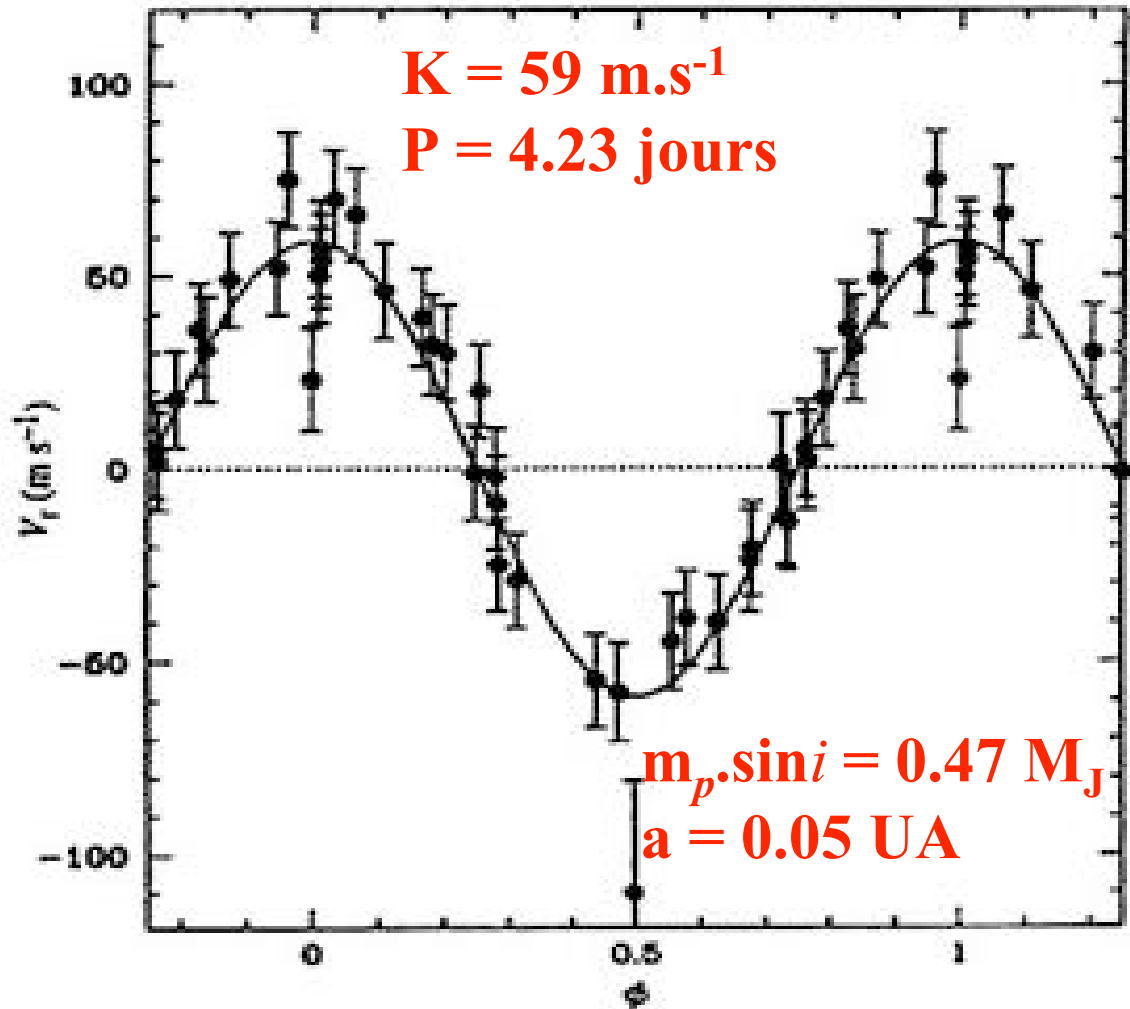
Une technique semi-directe : mesurer l'ombre de la planète ou son transit photométrique

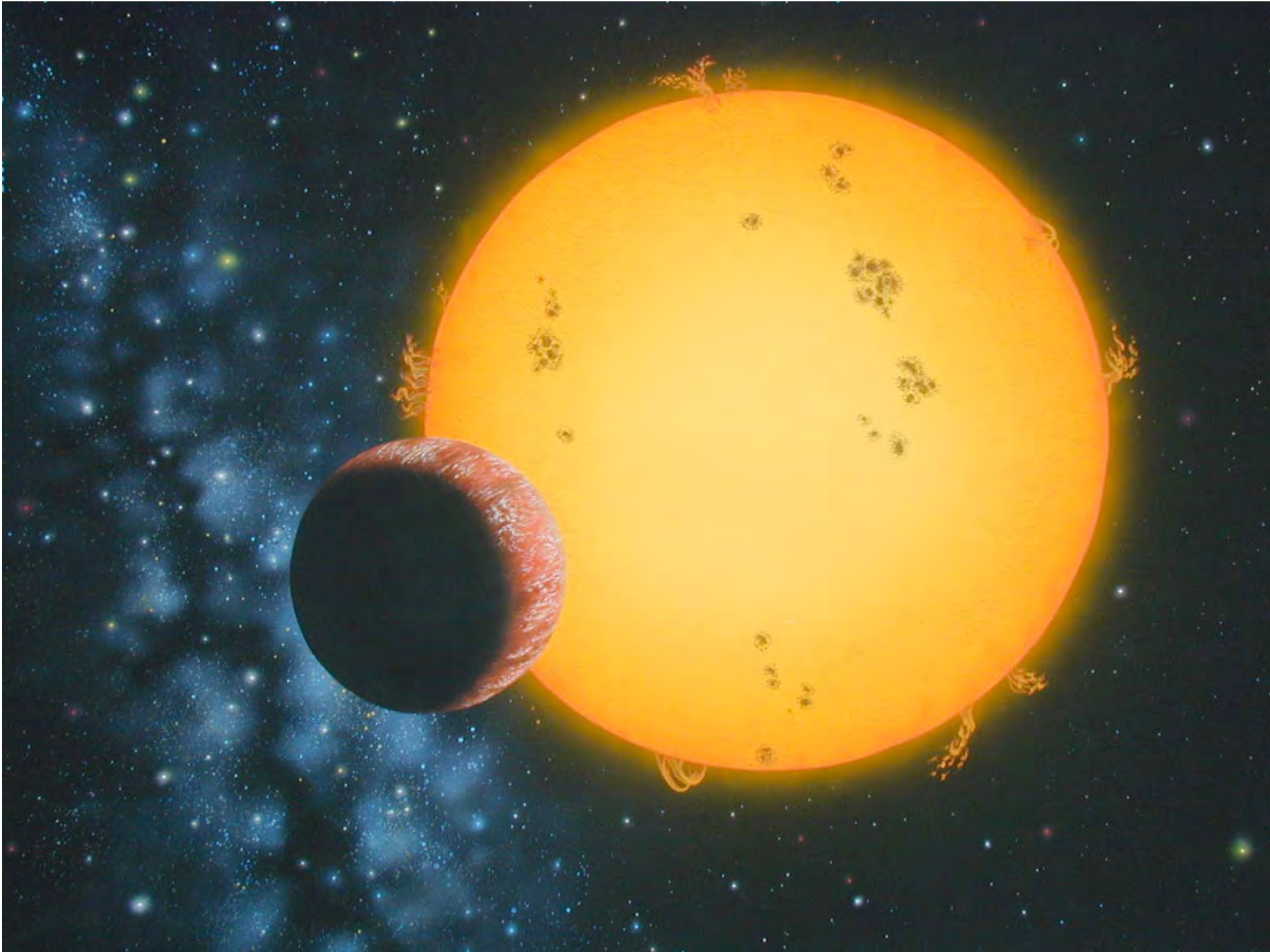




*Spectrographe ELODIE
1.93-m OHP*

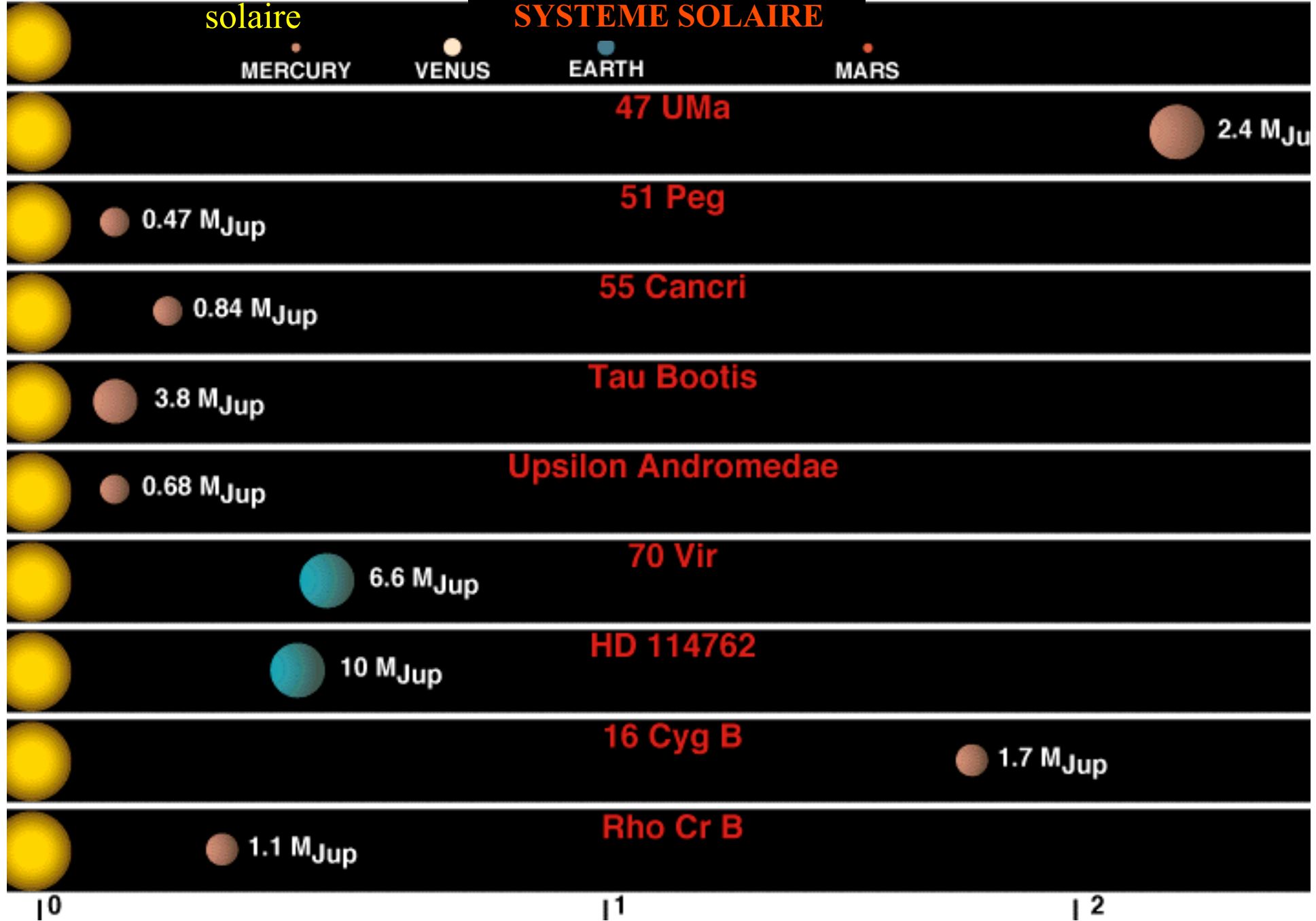
1995 : découverte de 51 Peg b
Première planète extra-solaire en orbite
autour d'une étoile de type solaire



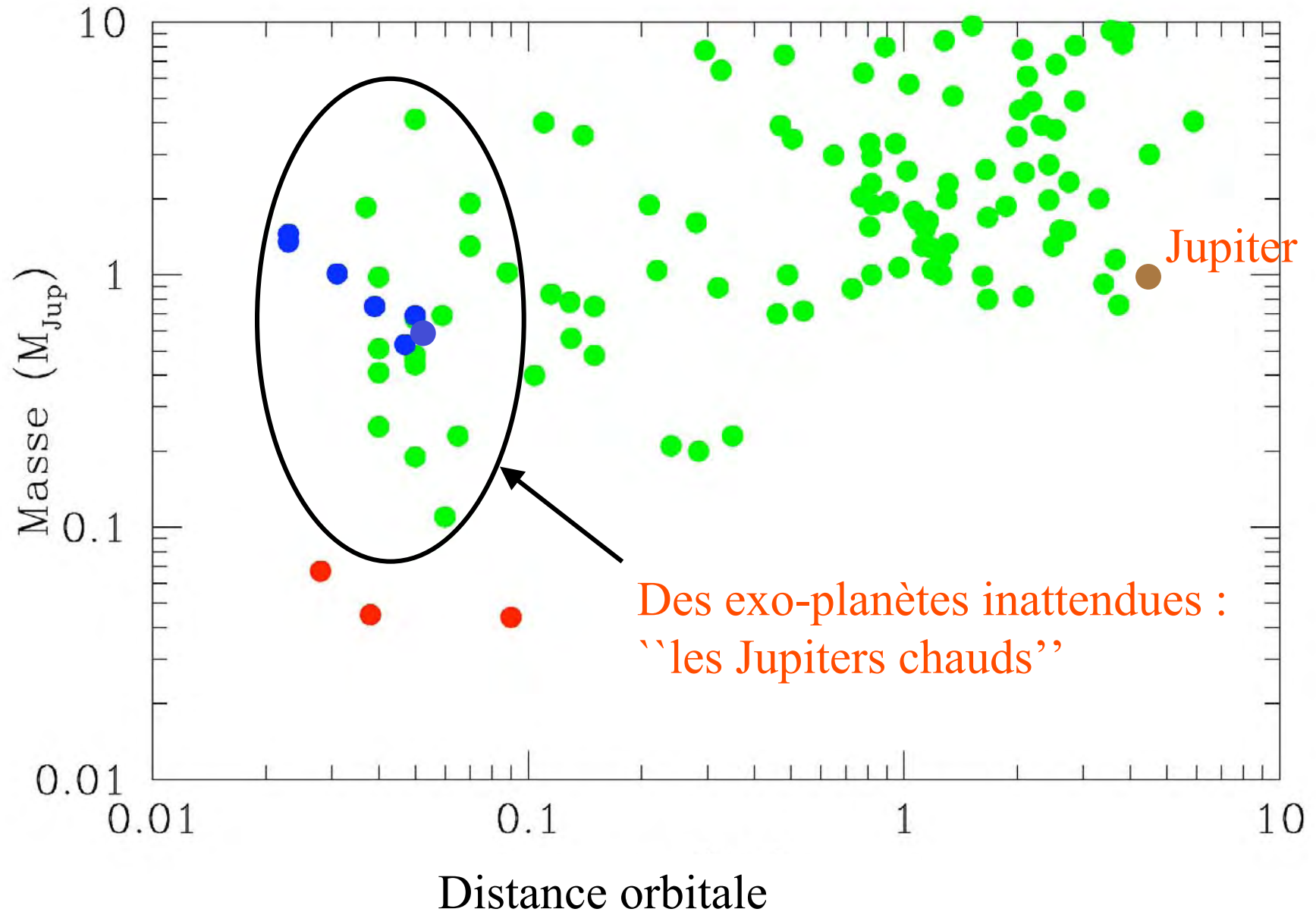


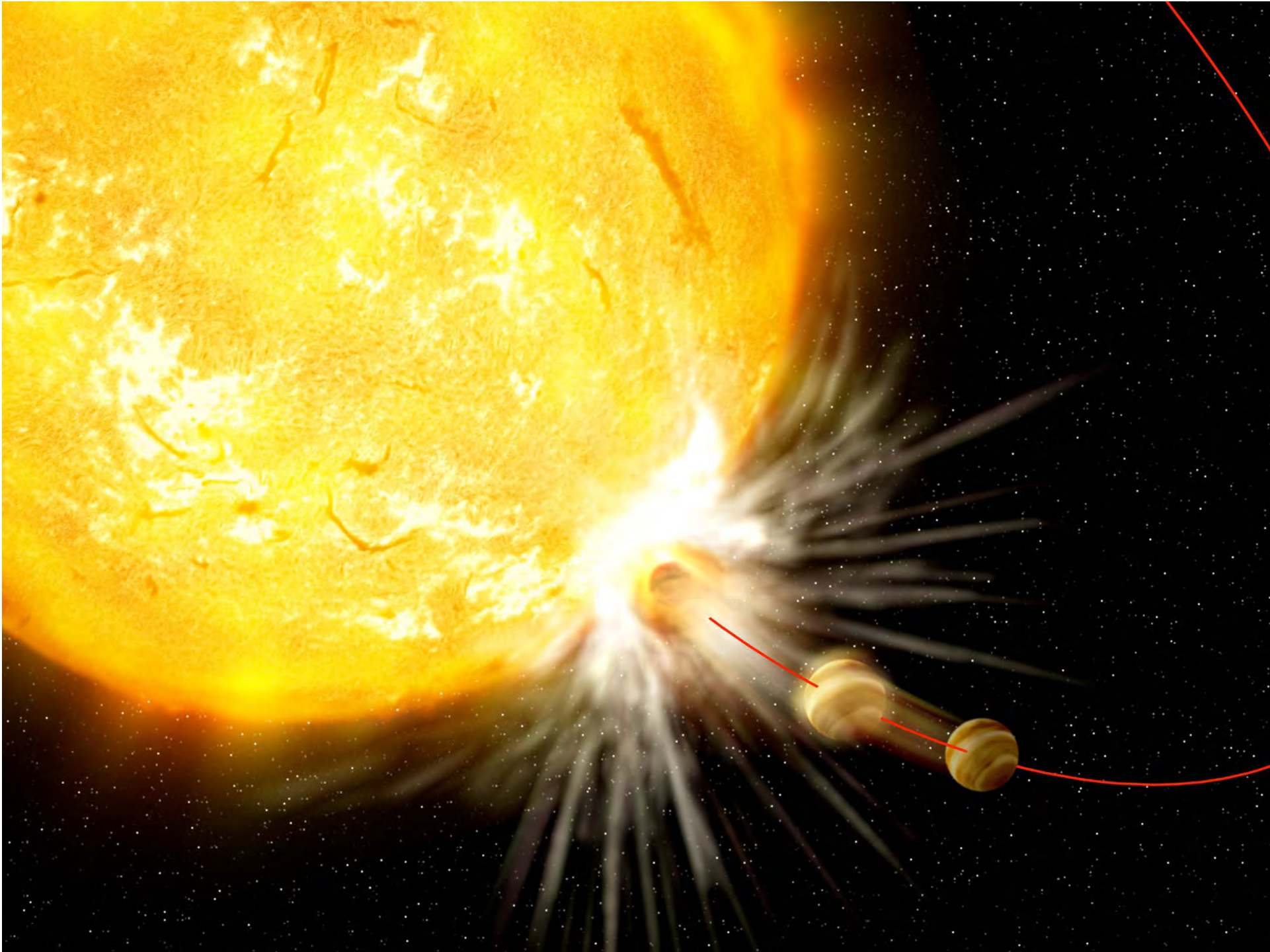
Les premières exo-planètes autour d'étoiles de type solaire

SYSTEME SOLAIRE

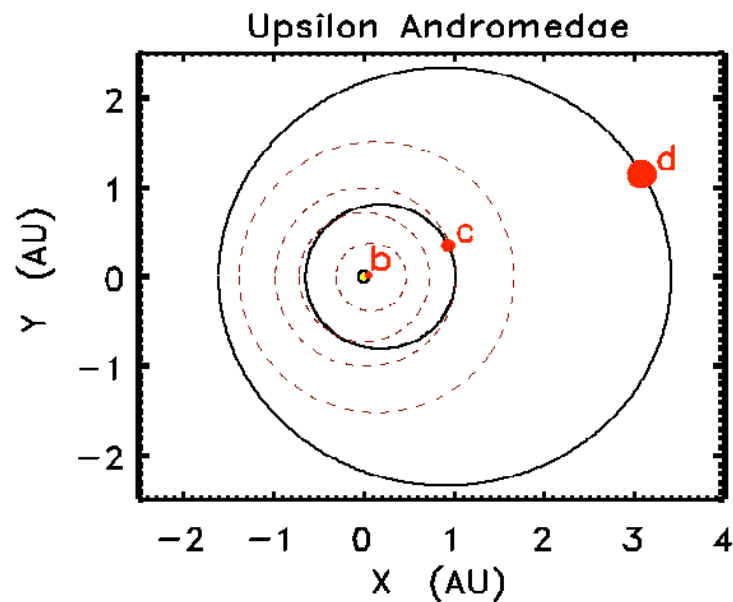
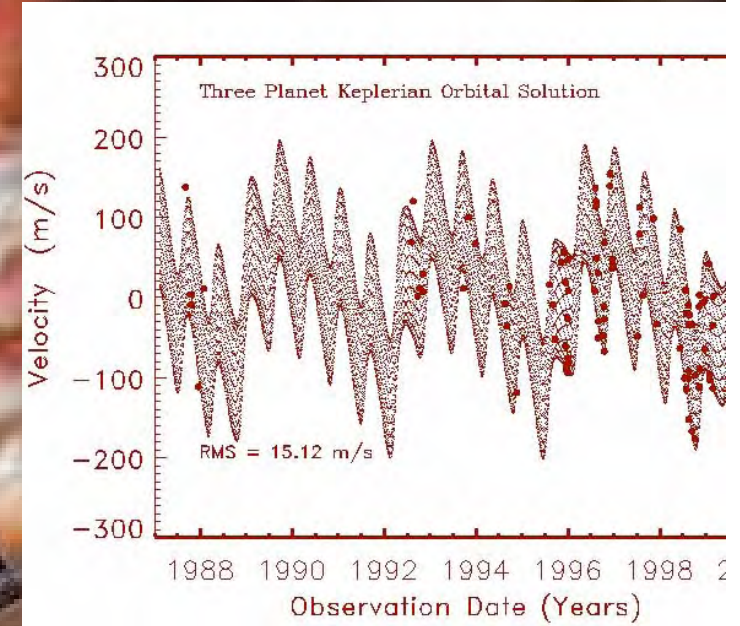
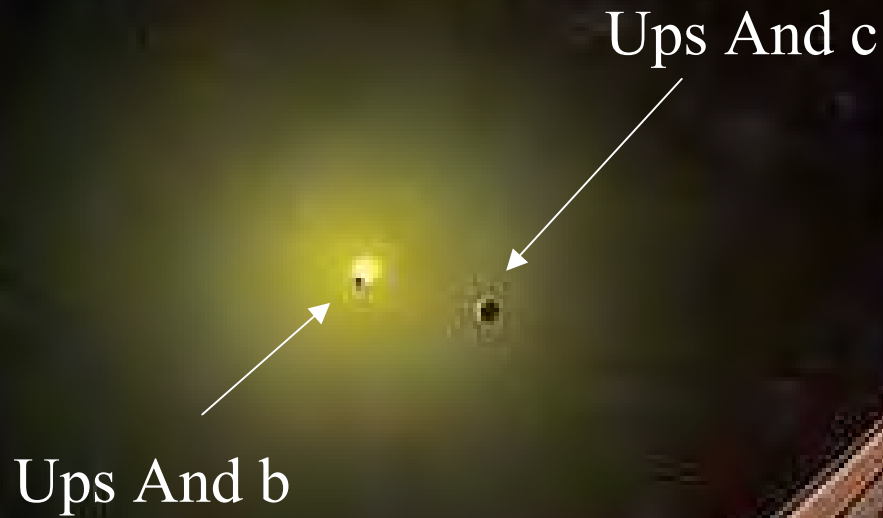


150 exoplanètes détectées par vélocimétrie





Systemes multiples ~ 15 % des exo-planètes



Upsilon And d

This label is positioned at the bottom of the image, with a white arrow pointing towards the faint, distant planet Upsilon And d in the background.

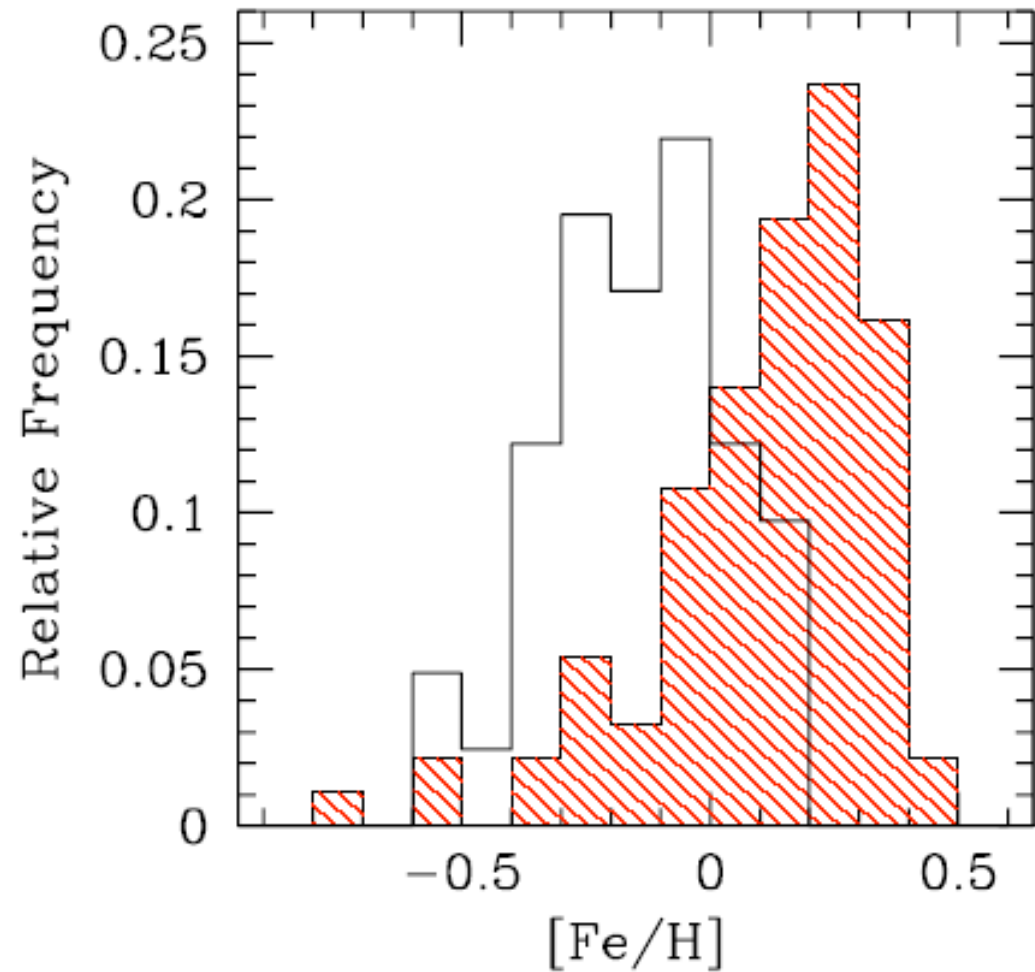
Spectroscopie des étoiles ayant des exo-planètes

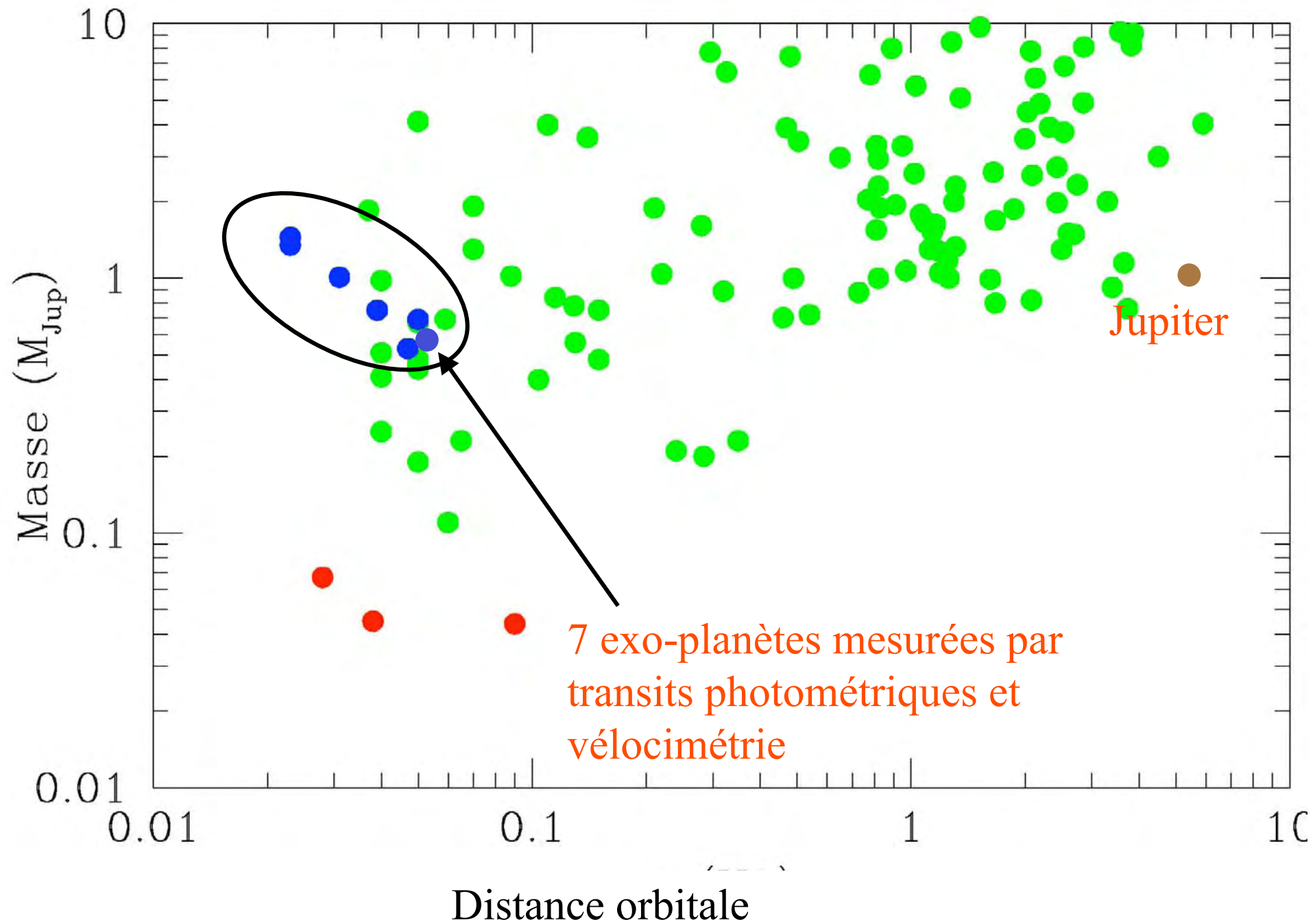


**Étoiles
à planètes**



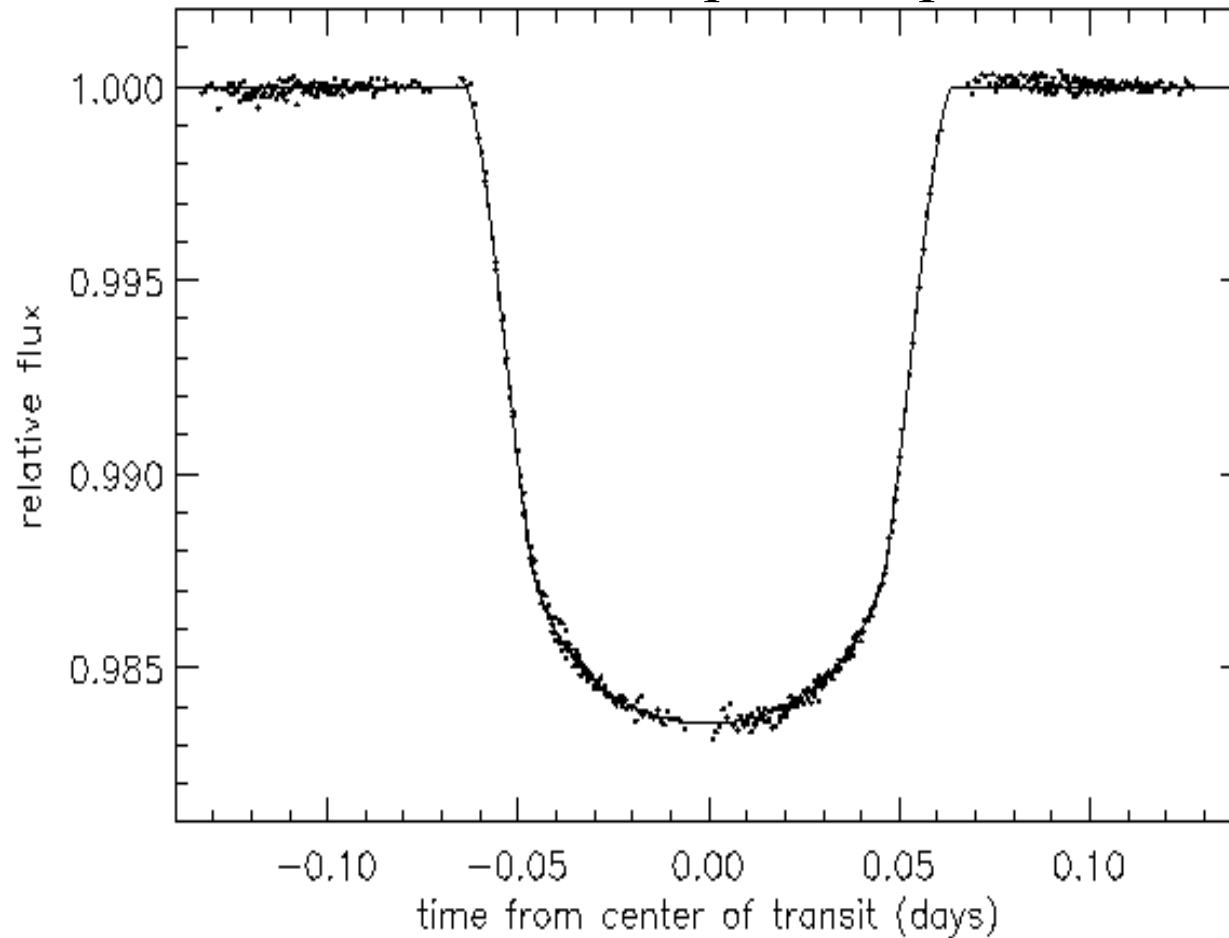
**Étoiles
sans planètes**





Le transit photométrique de l'exoplanète HD209458b

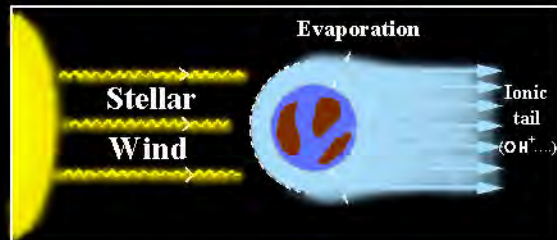
Mesuré depuis l'espace



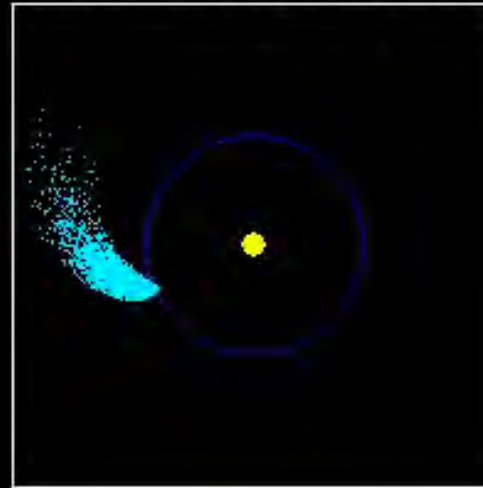
$1.4 R_{\text{Jup}}$
 $0.69 M_{\text{Jup}}$
 0.31 g.cm^{-3}

0.047 U.A.
 3.524 jours

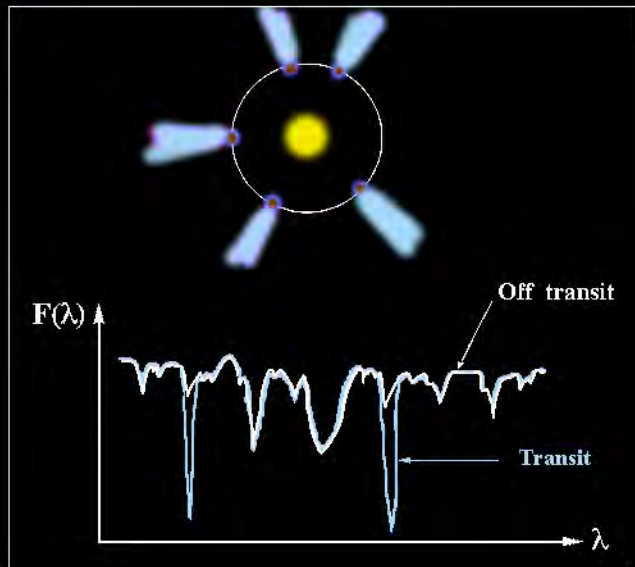
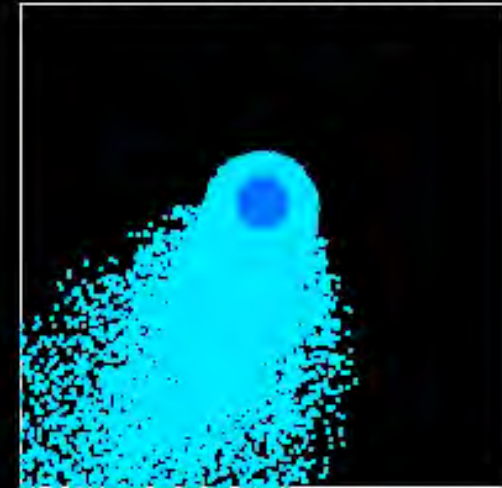
Evaporation de l'atmosphère de HD209458b



Systeme Etoile-Planete vu de dessus



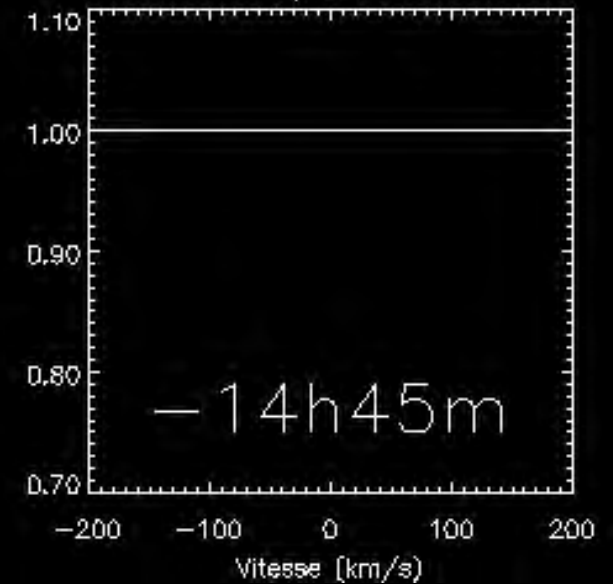
Planete vue de dessus



Etoile vue de la Terre



Spectre

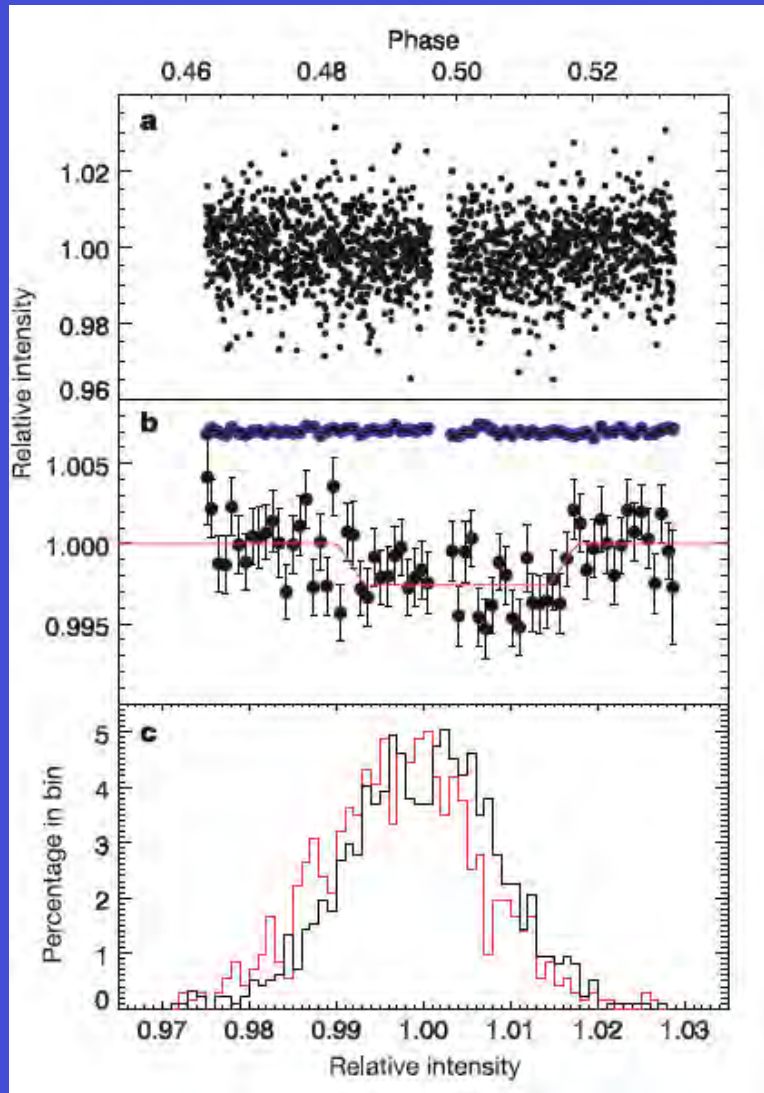




Anti-transit de HD209458b

à $24\ \mu\text{m}$ \rightarrow 0.26 %

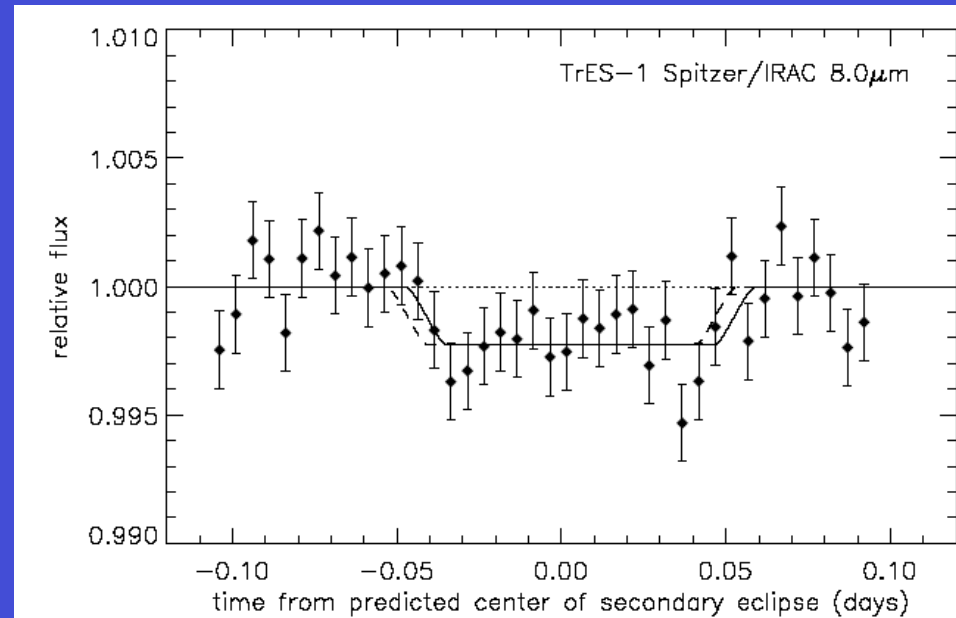
$T \sim 1100\ \text{K}$



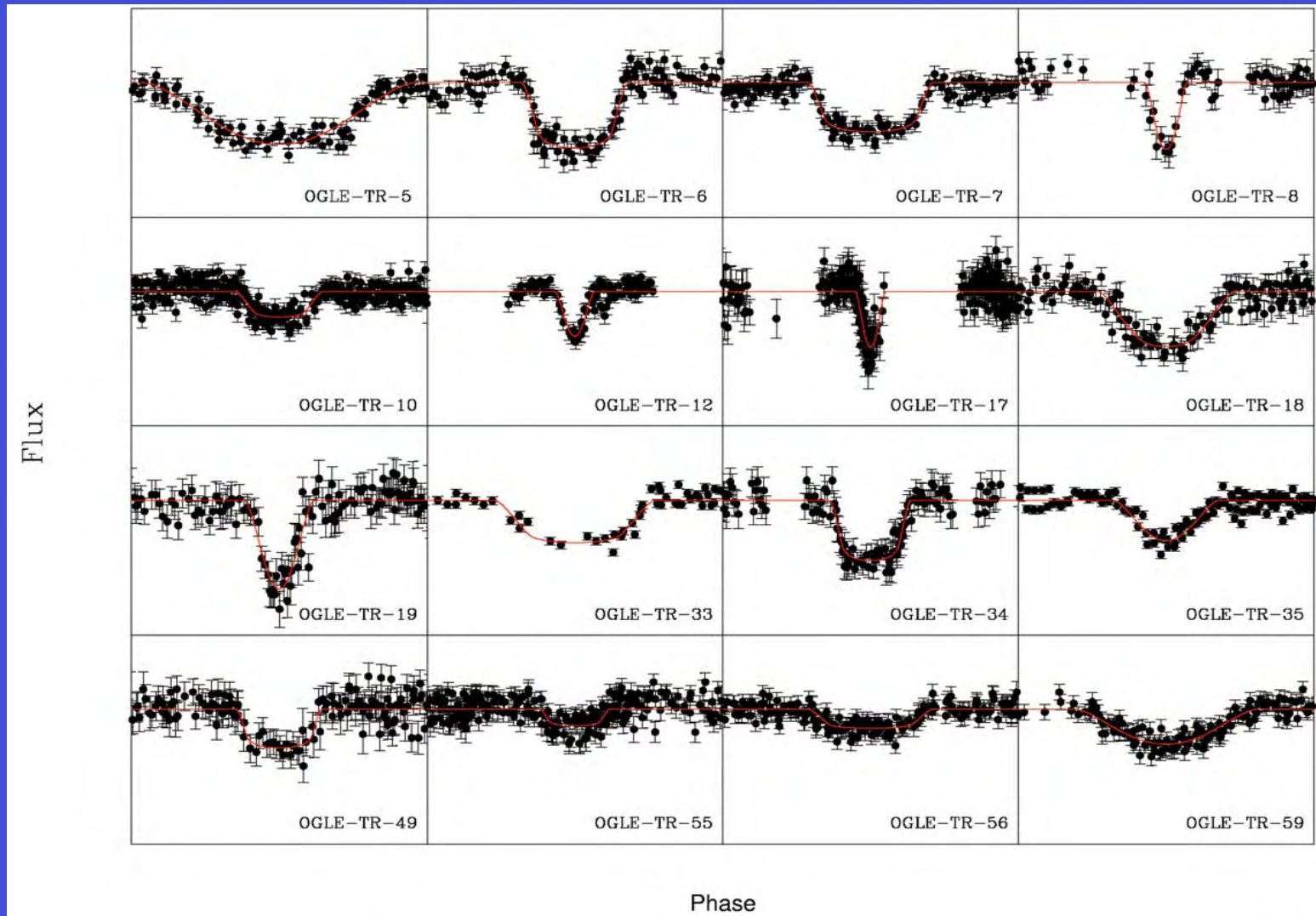
Anti-transit de TrES-1

à $8\ \mu\text{m}$ \rightarrow 0.22 %

$T \sim 1000\ \text{K}$

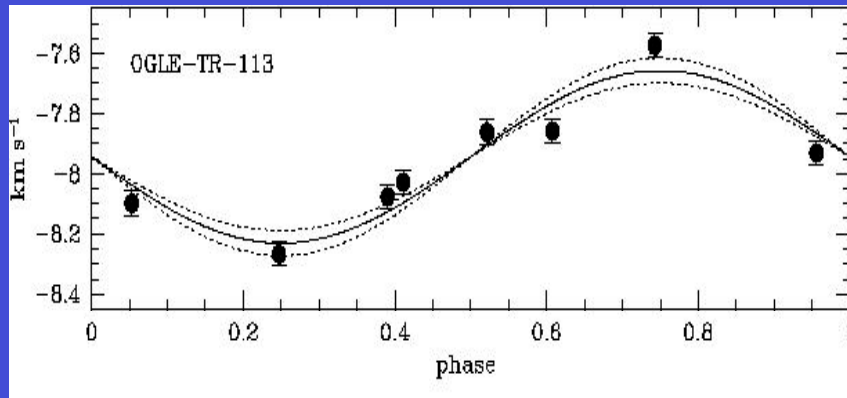


Une centaine de candidats transits détectés par le programme OGLE

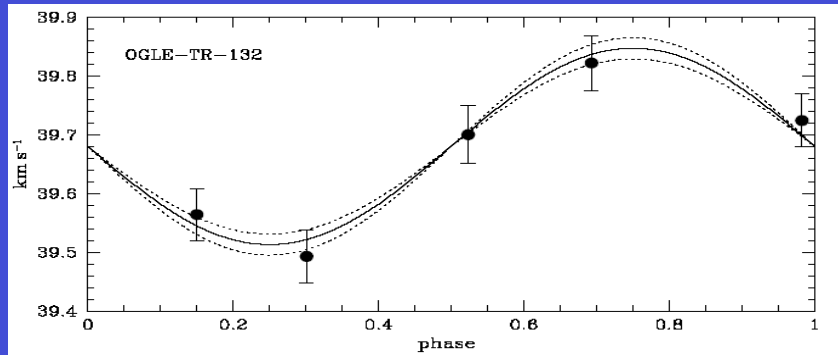
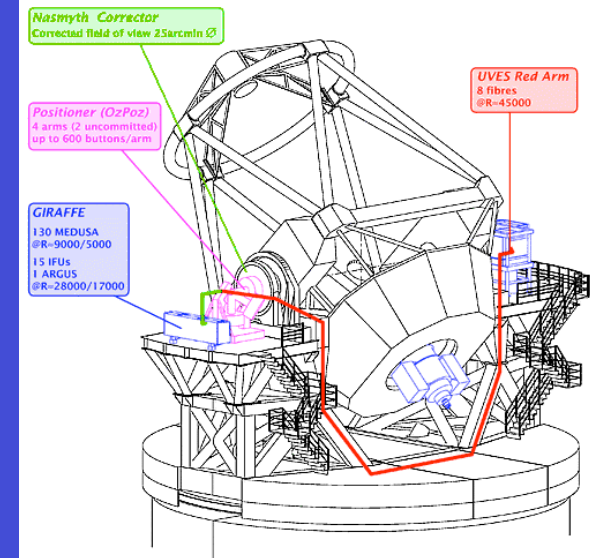


Suivi vélocimétrique avec le VLT

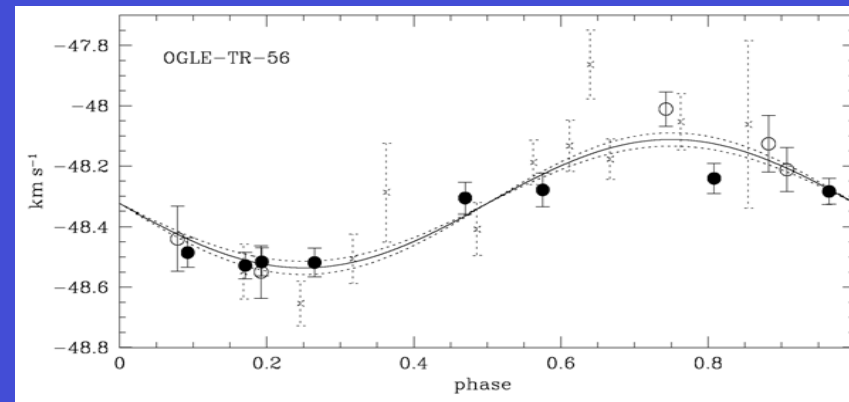
Caractérisation de ``Jupiters très chauds``



$P = 1.43 \text{ j}$
 $m = 1.35 \pm 0.22 M_J$

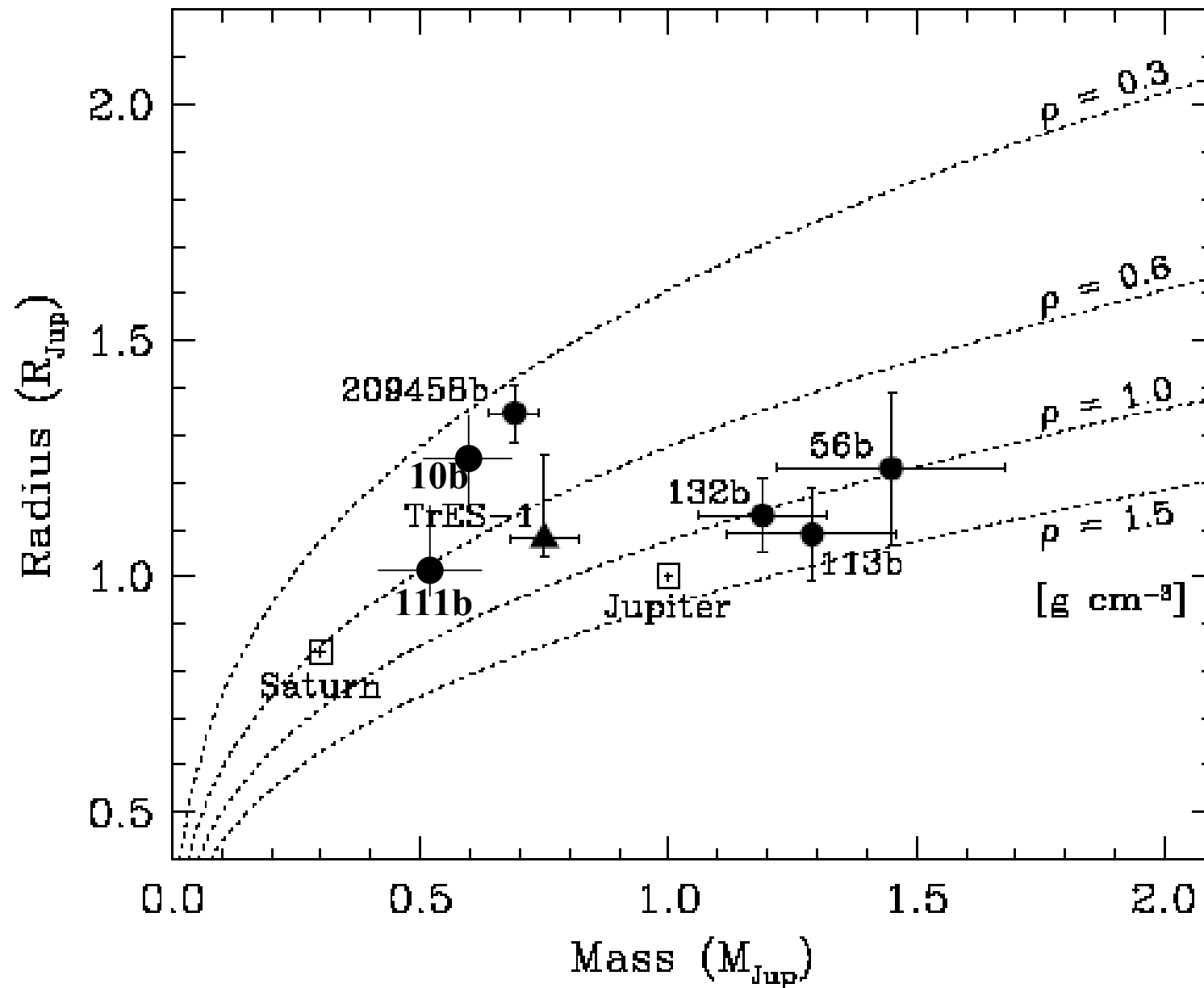


$P = 1.69 \text{ j}$
 $m = 1.19 \pm 0.13 M_J$



$P = 1.21 \text{ j}$
 $m = 1.13 \pm 0.12 M_J$

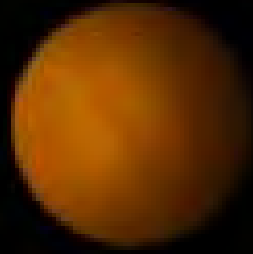
Relation masse-rayon des 7 exo-planètes



Une étoile de la taille d'une planète !

Soleil

$1000 M_{\text{Jup}}$



OGLE-TR-

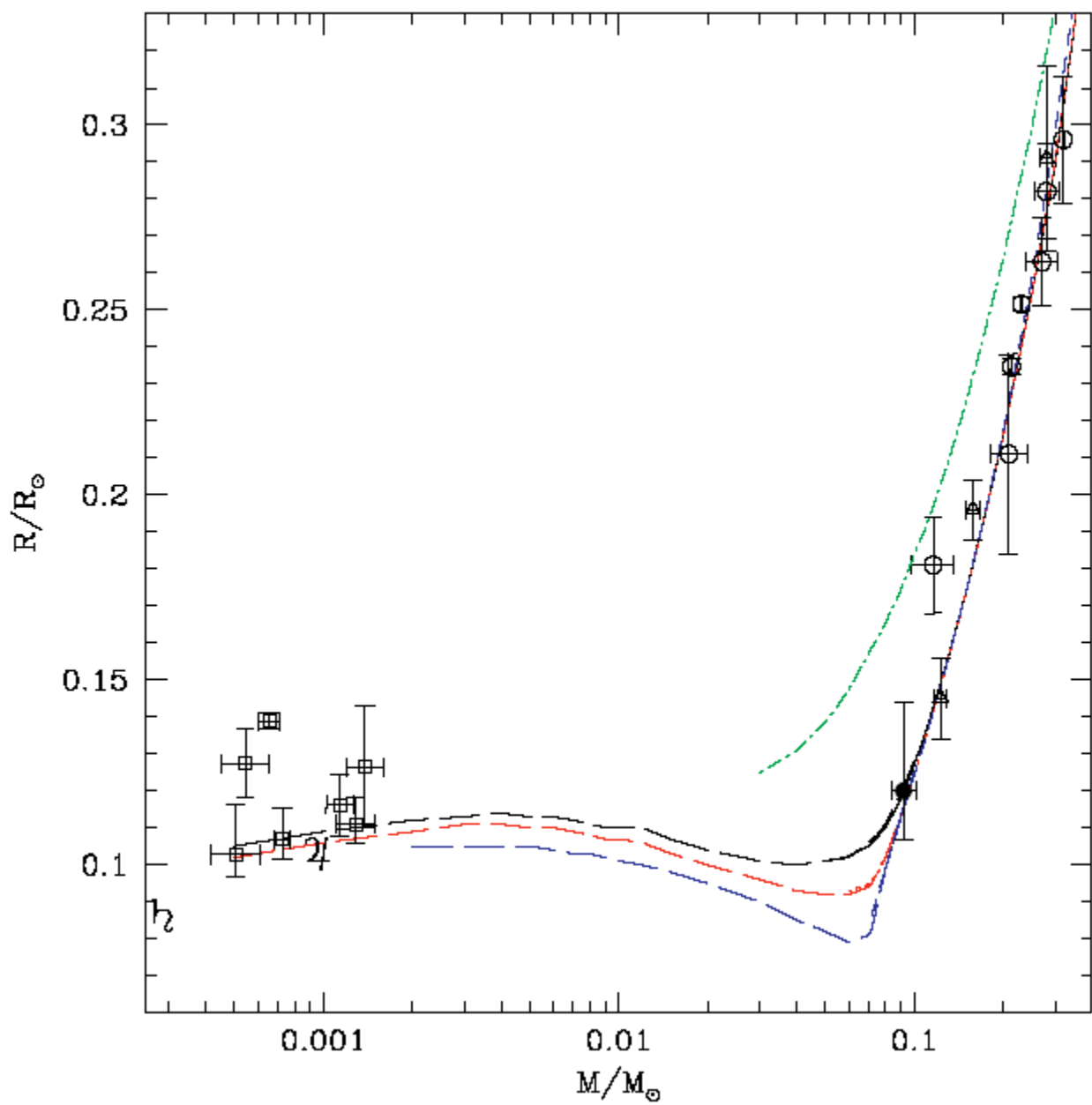
122b

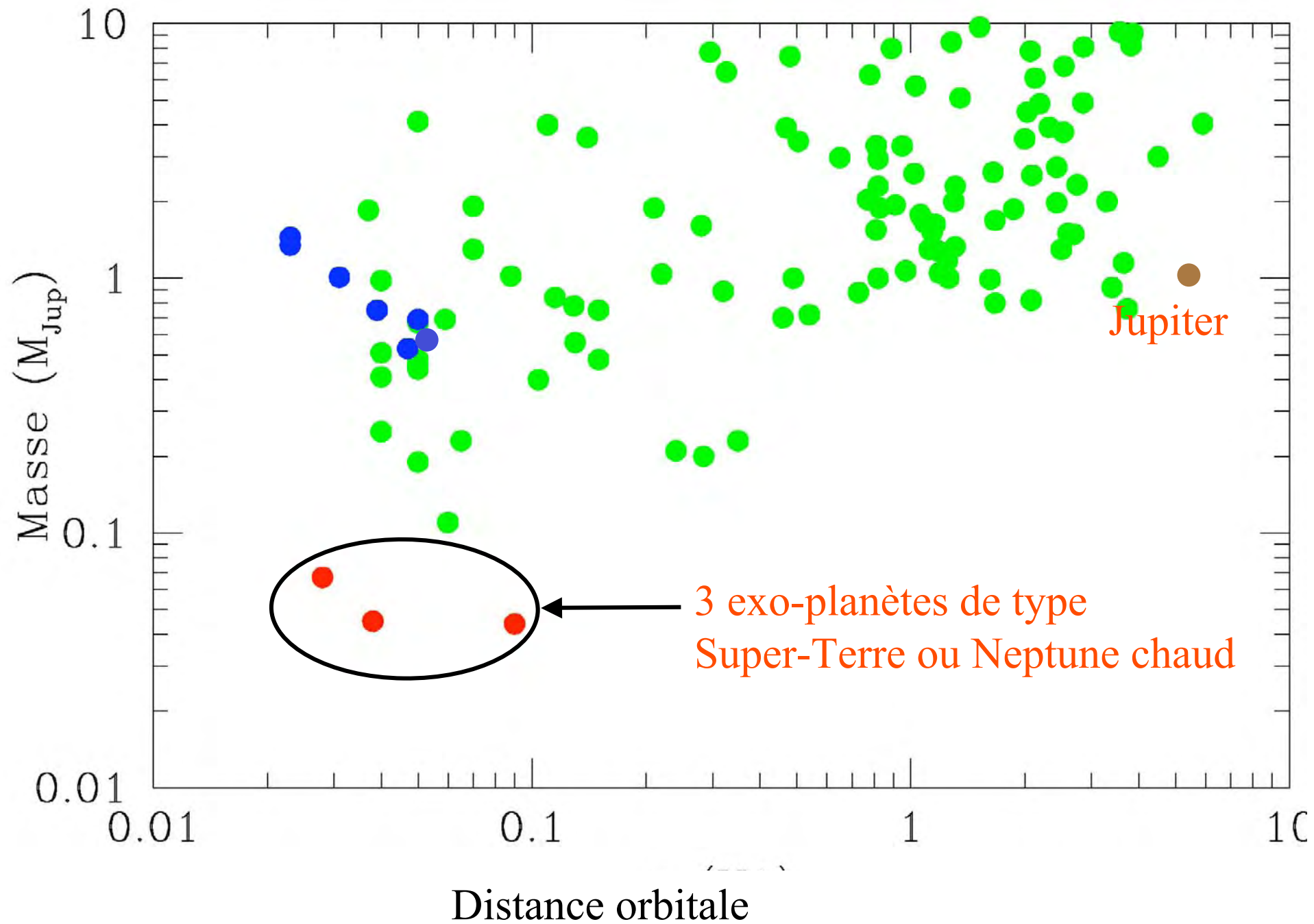
$100 M_{\text{Jup}}$



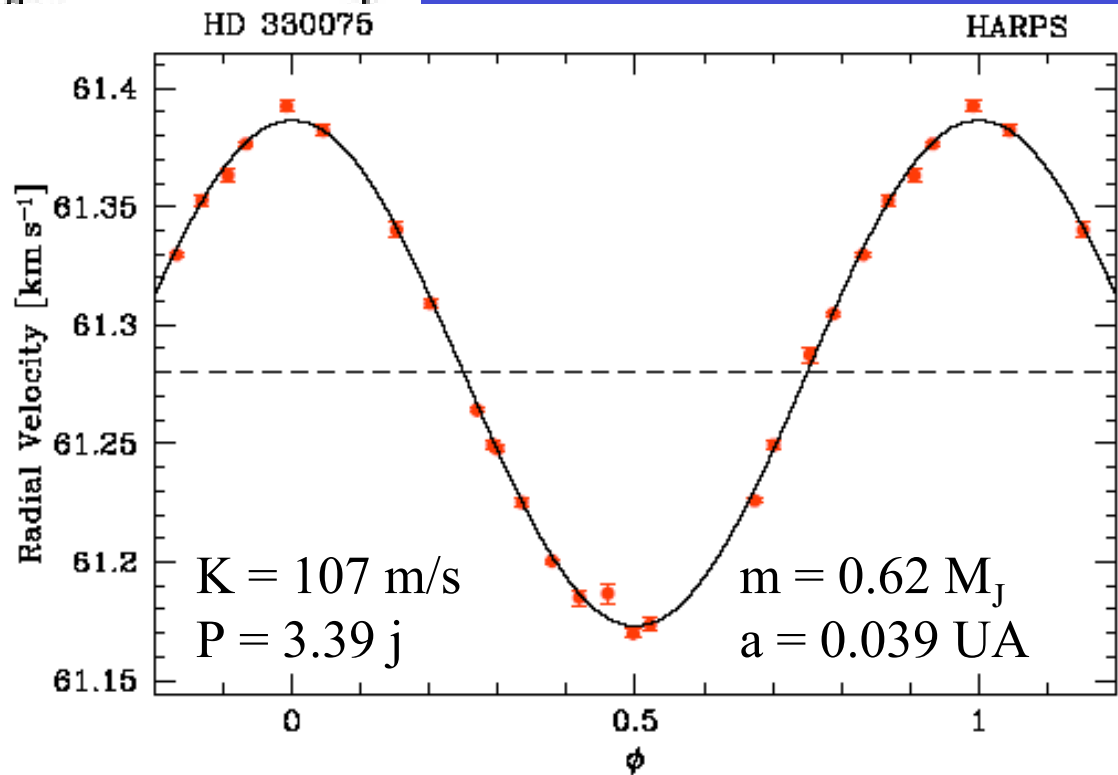
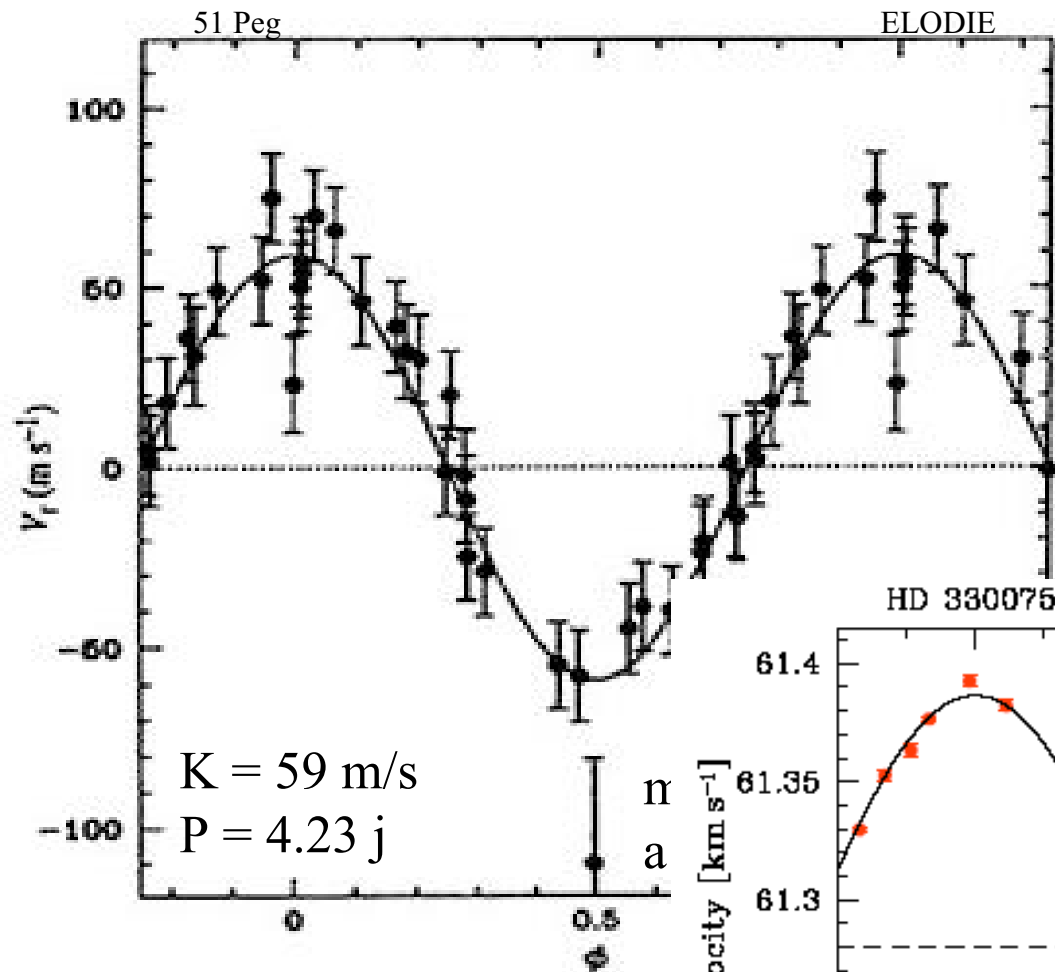
Jupiter

$1 M_{\text{Jup}}$





Gain en précision des techniques de vélocimétrie



La Vénus de mu Arae

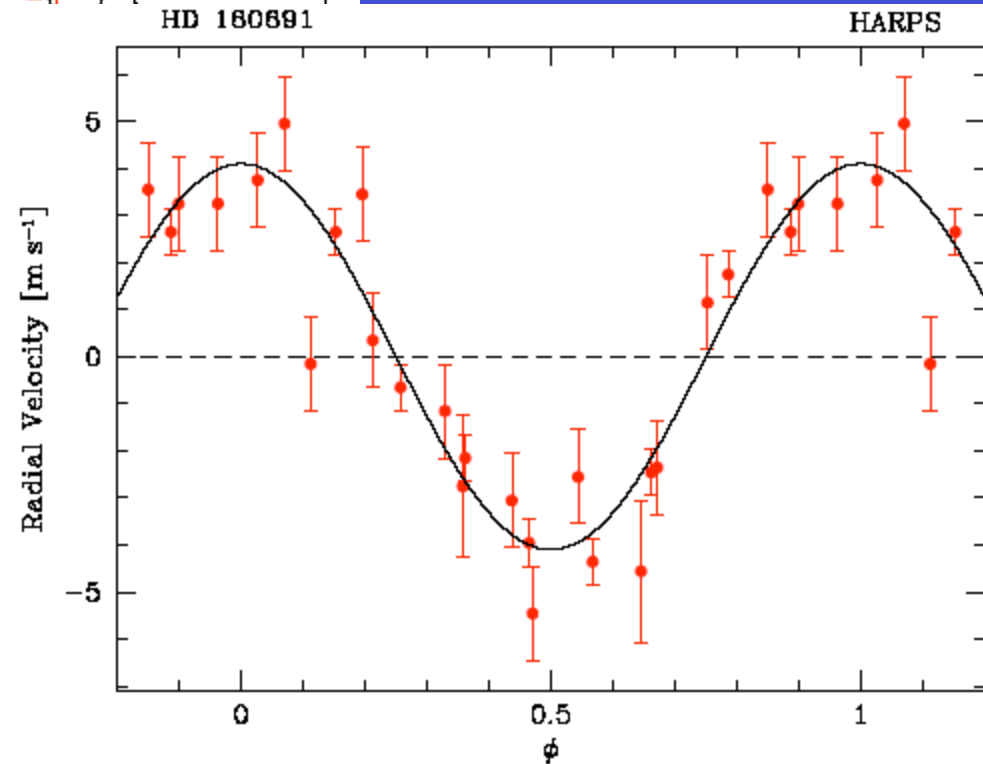
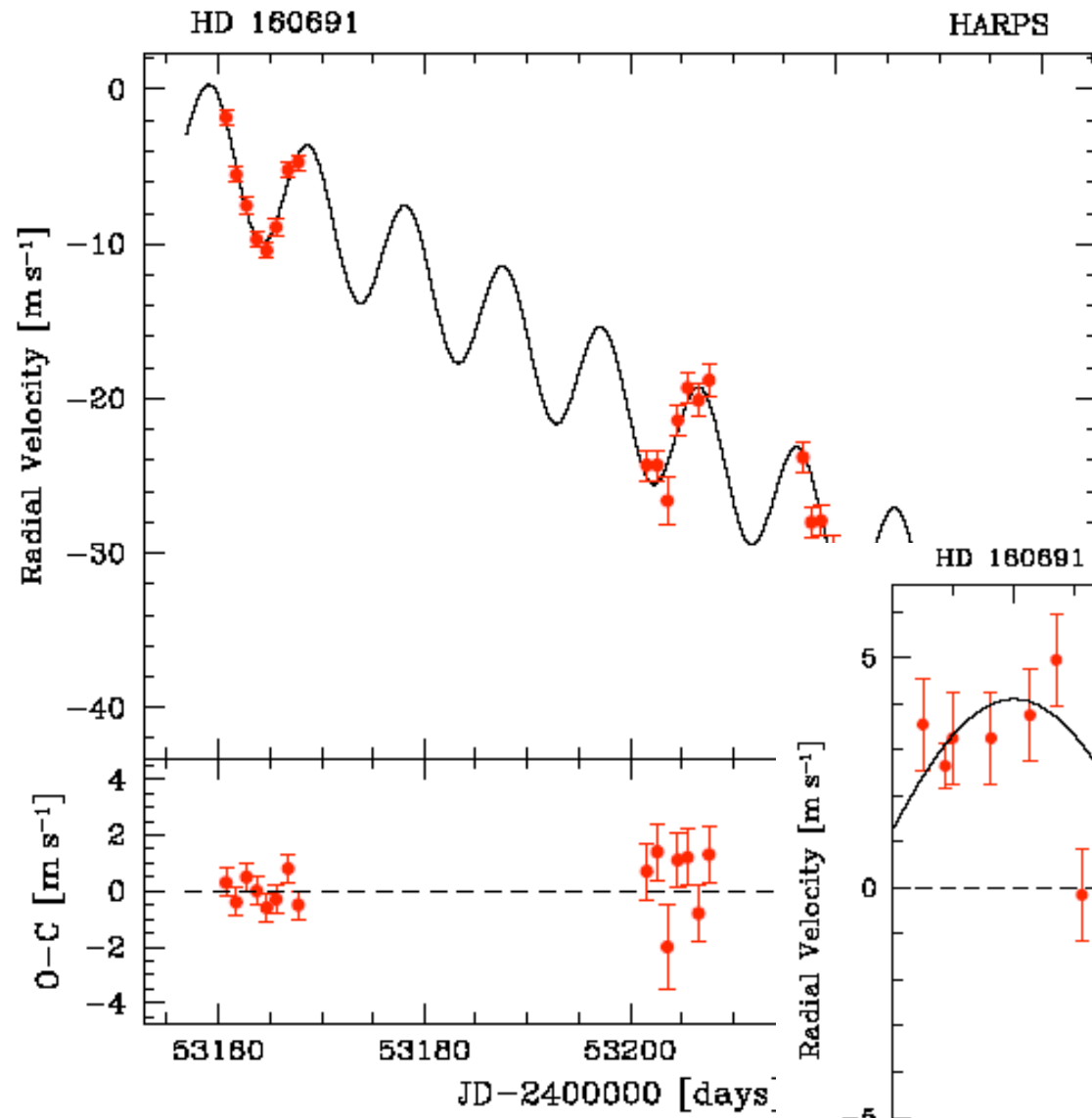
$P = 9.55 \text{ j}$

$K = 4.1 \text{ m/s}$

$m.\text{sini} = 14 \text{ Mterre}$

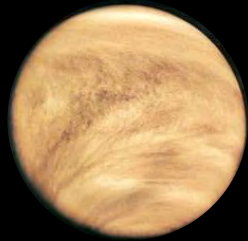
$a = 0.09 \text{ UA}$

$O-C = 0.9 \text{ m/s}$





Terre



La Vénus de μ Arae



Jupiter

