

A-type stars and planet formation

Interest of early-type stars

Formation mechanisms: impact of central mass

Studies of disk-planet interaction

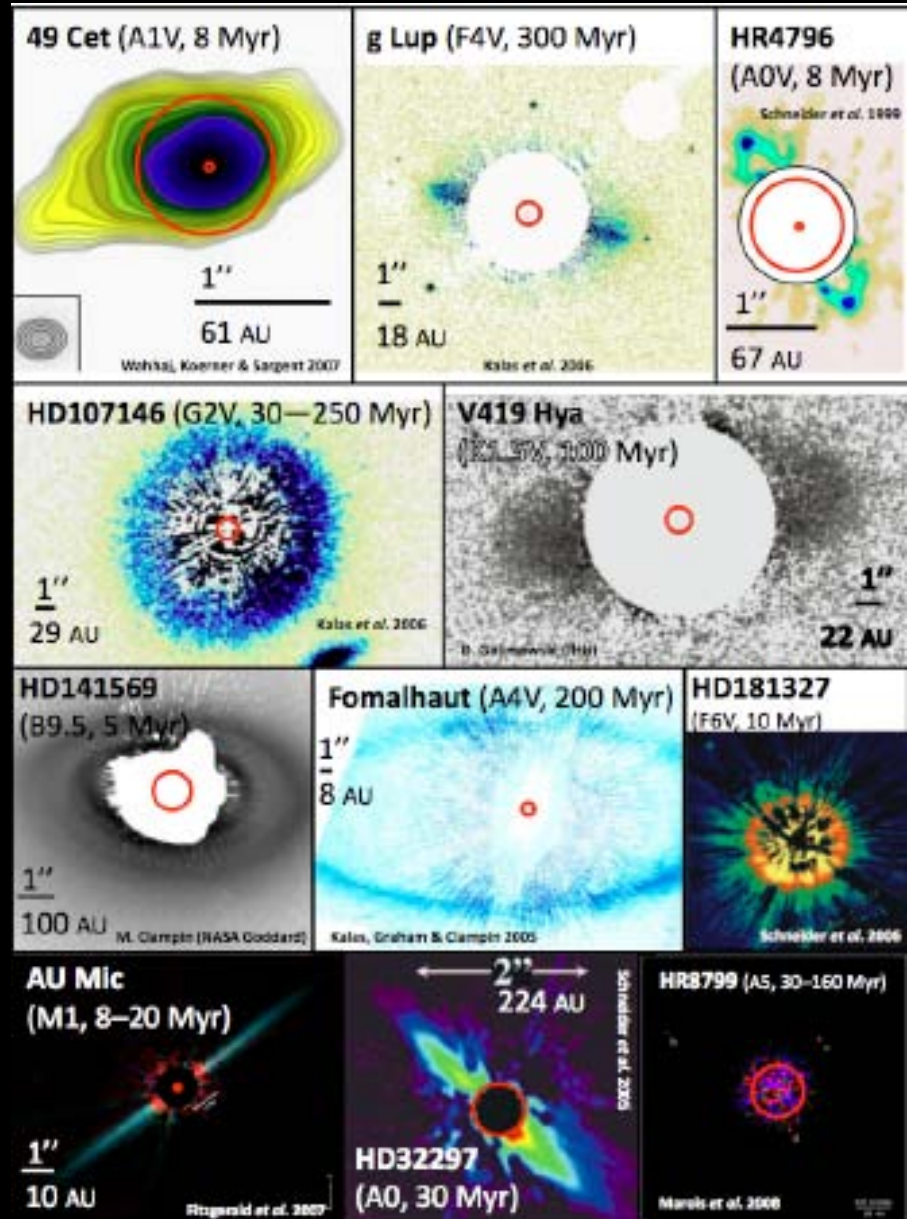
Habitable zone further away % solar-type stars

Detection capabilities

+ models predict more massive and more frequent GPs ; what about low mass planets?

+ debris disks (as signs of planets) can be bright

Disks resolved (debris)



most around early-type stars

Also transitional disks

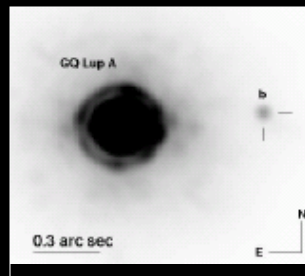
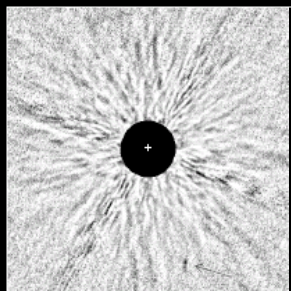
Mjup

13

5

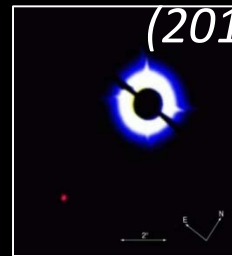
1

Tahlmann et al. (2009)

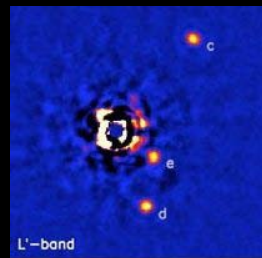


Neuhauser et al. (2005; 2008)

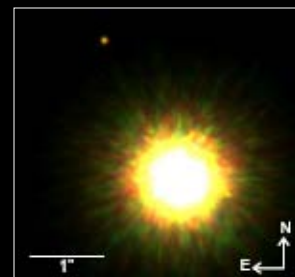
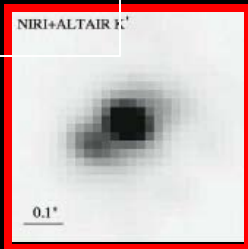
Ireland et al. (2011)



Chauvin et al. (2005a)



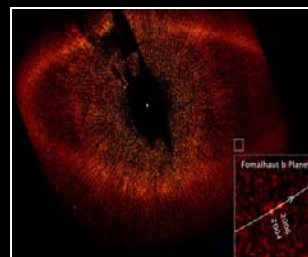
Marois et al. (2008)



Lafrenière et al. (2008;2010)

Todorov et al. (2010)

Chauvin et al. (2004;2005)

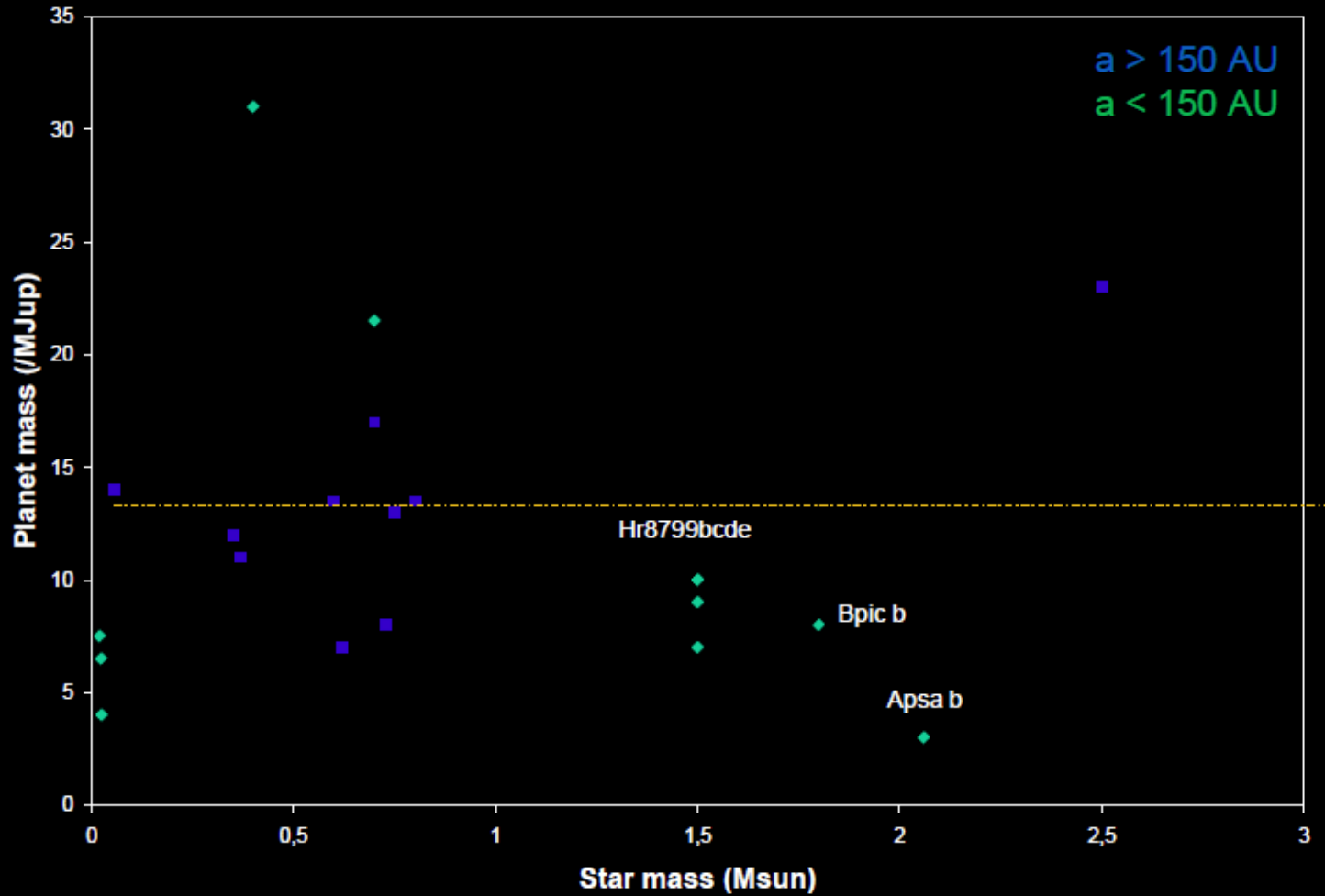


Kalas et al. (2008)

10-20 AU

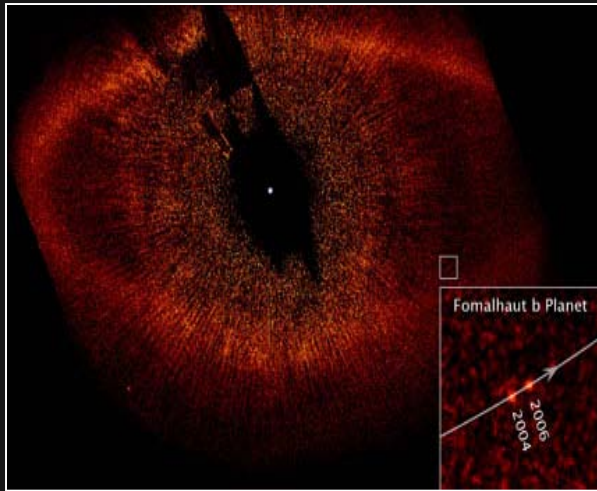
20-60 AU

100-350 AU

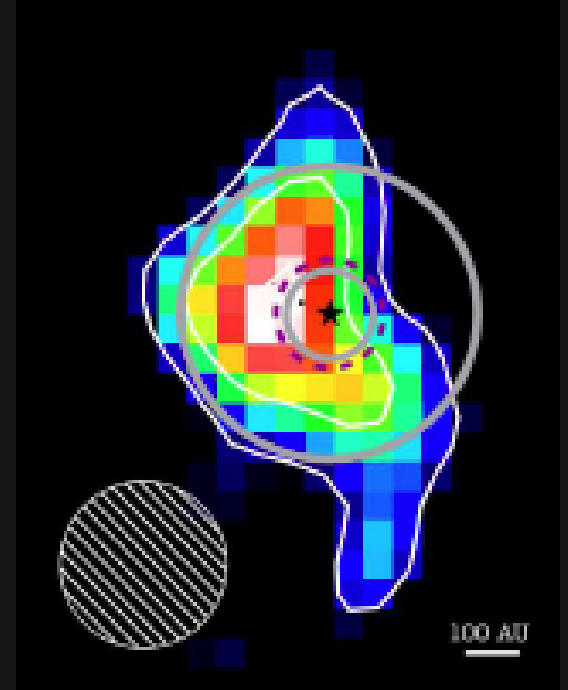


The closest planets found around stars orbit young (10-100Myr) A-type stars

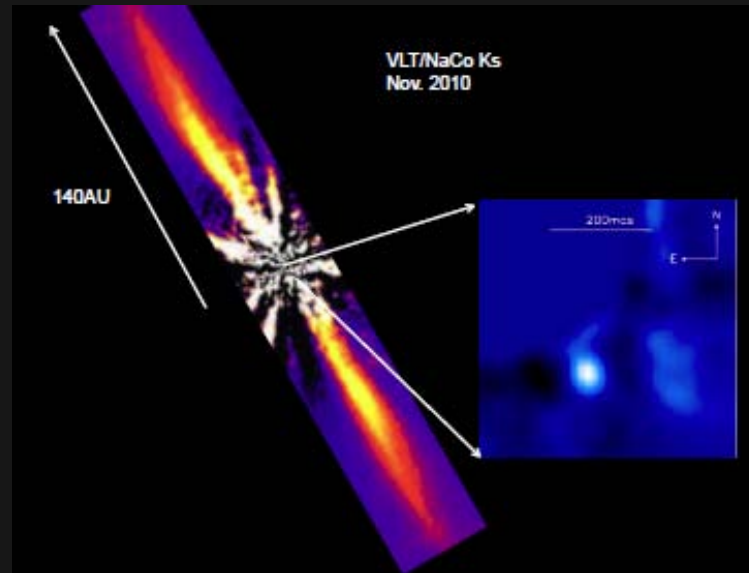
Planet-disk interaction



A PsA HST
(Kalas et al, 2008)

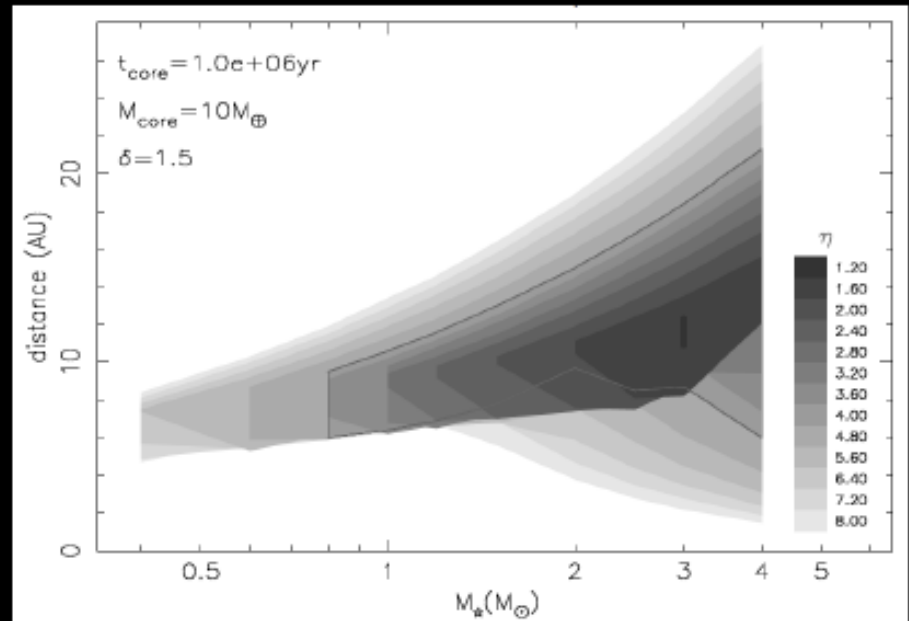
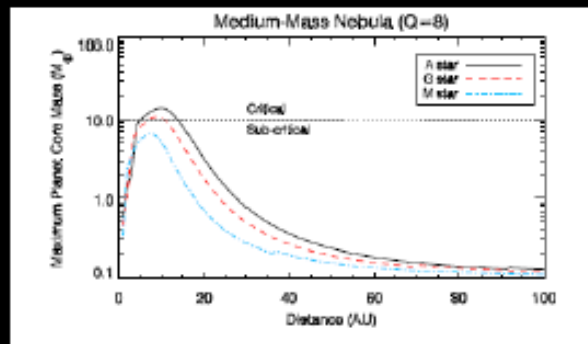
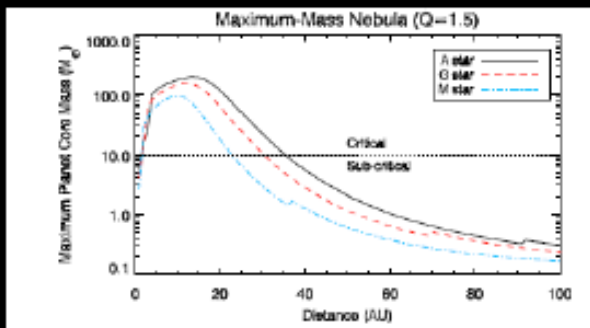


HR8799 CSO
(Patience et al, 2011)



B pic NaCO (Lagrange et al, 2011)

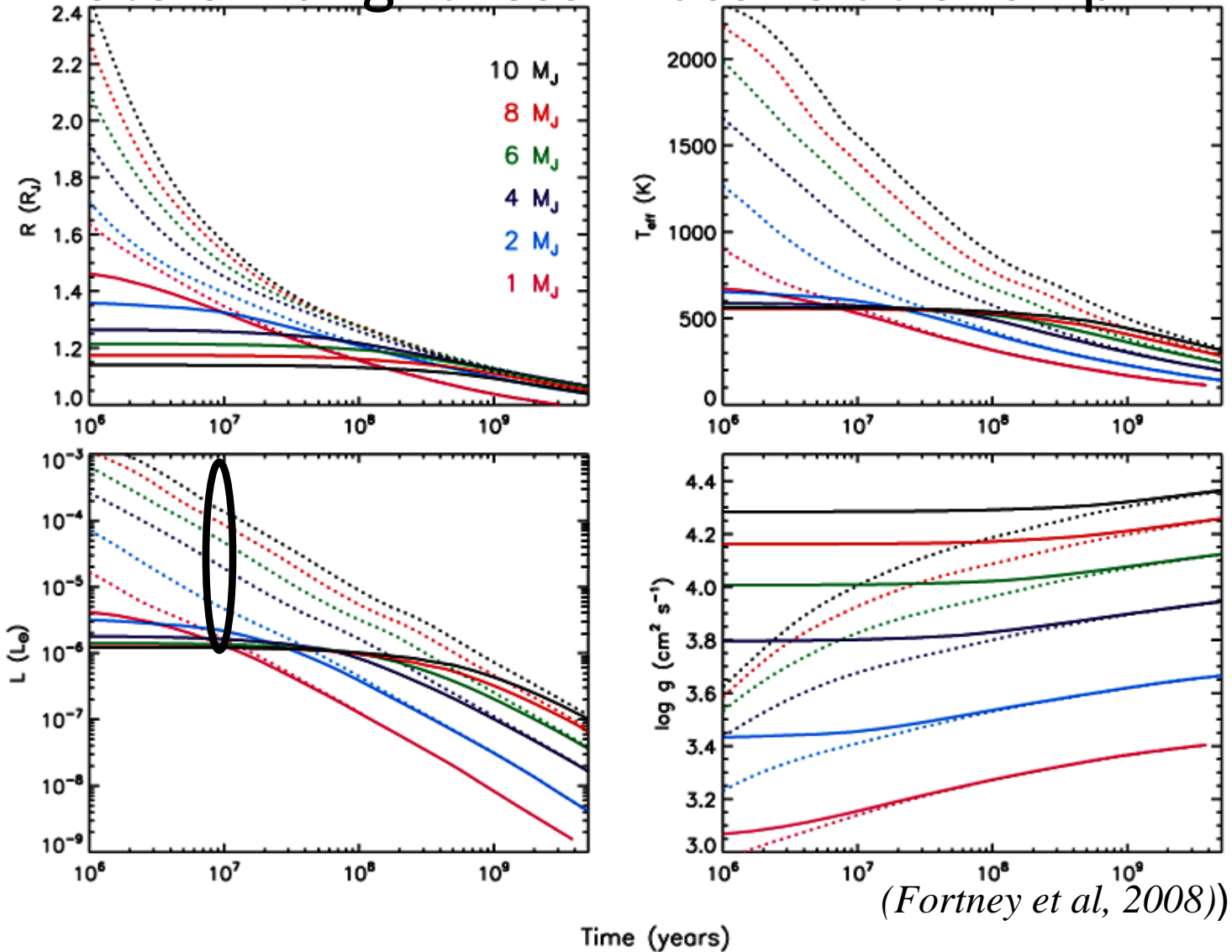
Formation mechanisms



Dodson-Robinson et al, (2008)

Kennedy & Kenyon (2008)

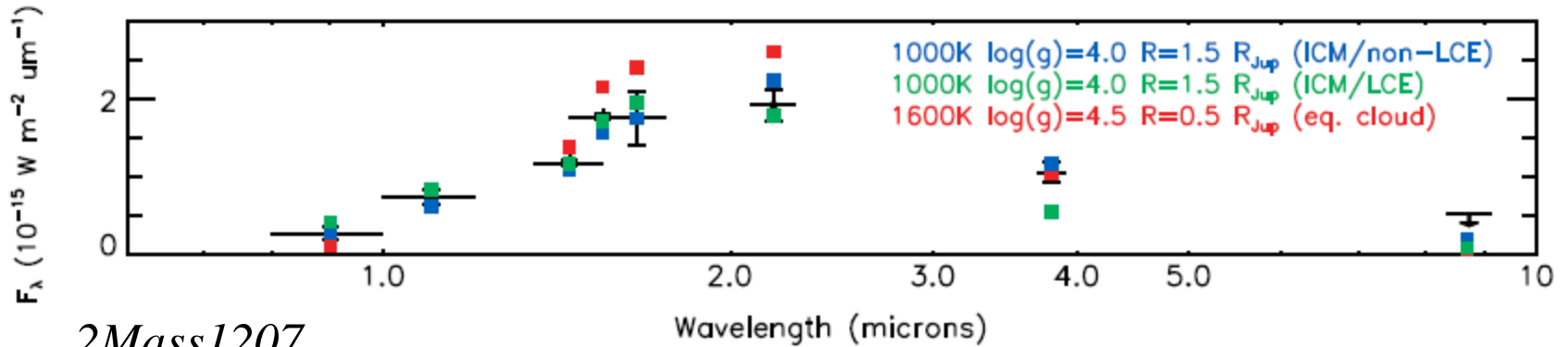
Note on brightness-mass relationship



Large uncertainties on the mass of imaged planets

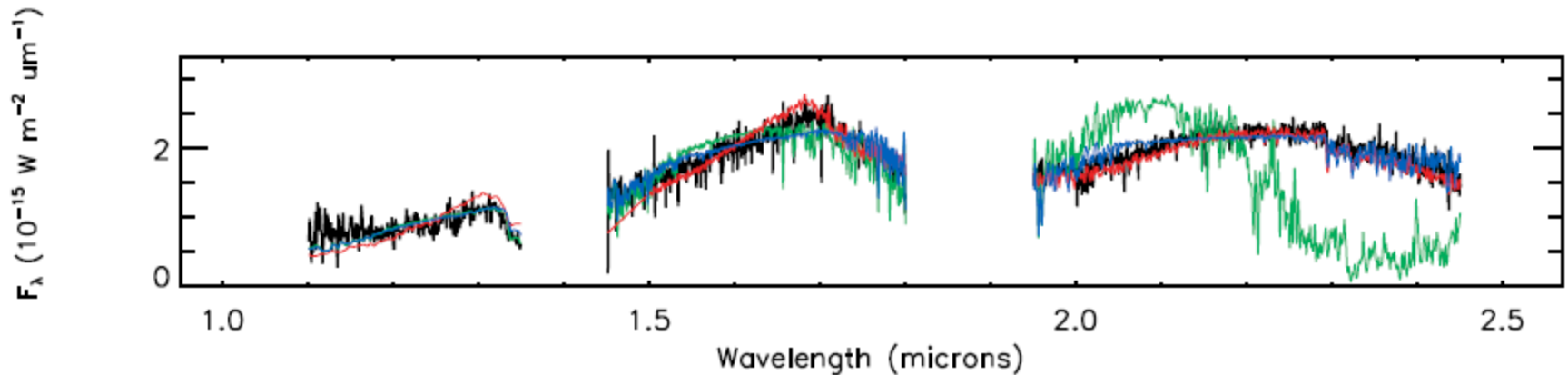
Need for dynamical masses: ex β Pic b Harps upper mass (Lagrange et al, 2011)

Spectrophotometry and spectroscopy of young EGPs

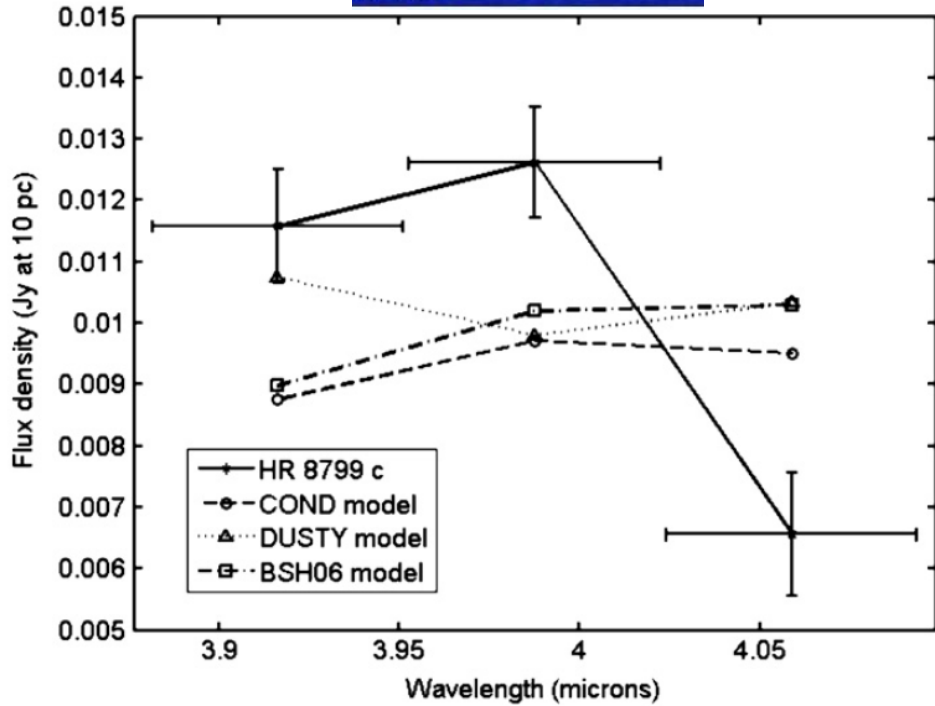
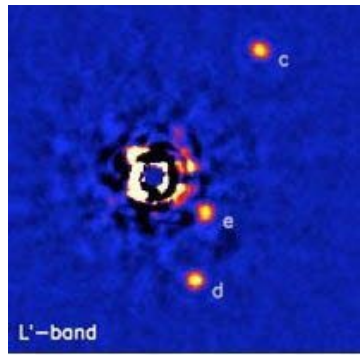


2Mass1207

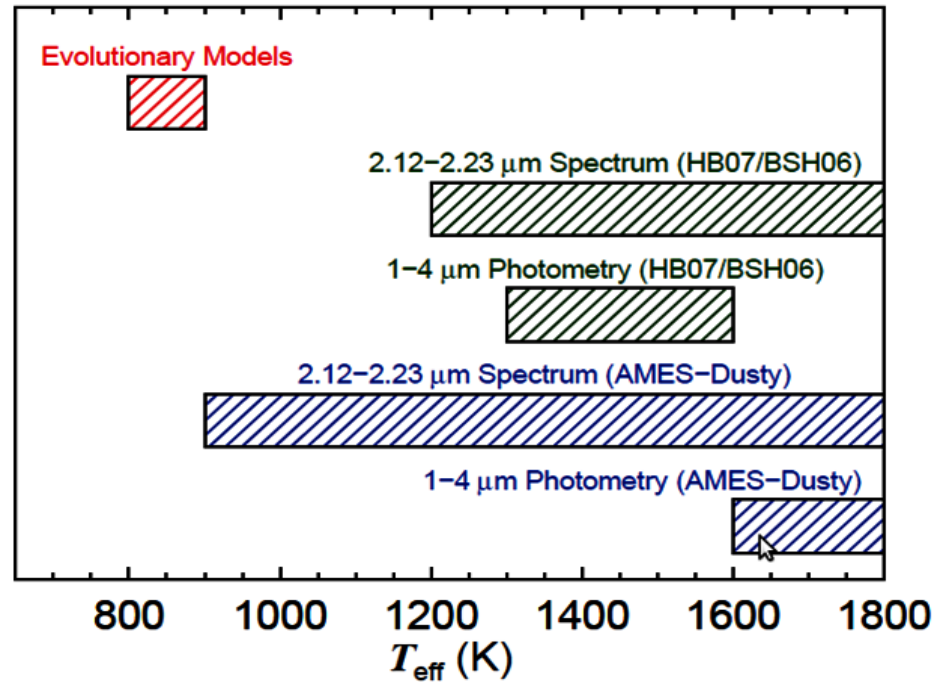
(Barman et al, 2011)



Atmospheric model: degeneracy: (Teff, gravity, R, age, metallicity, clouds)



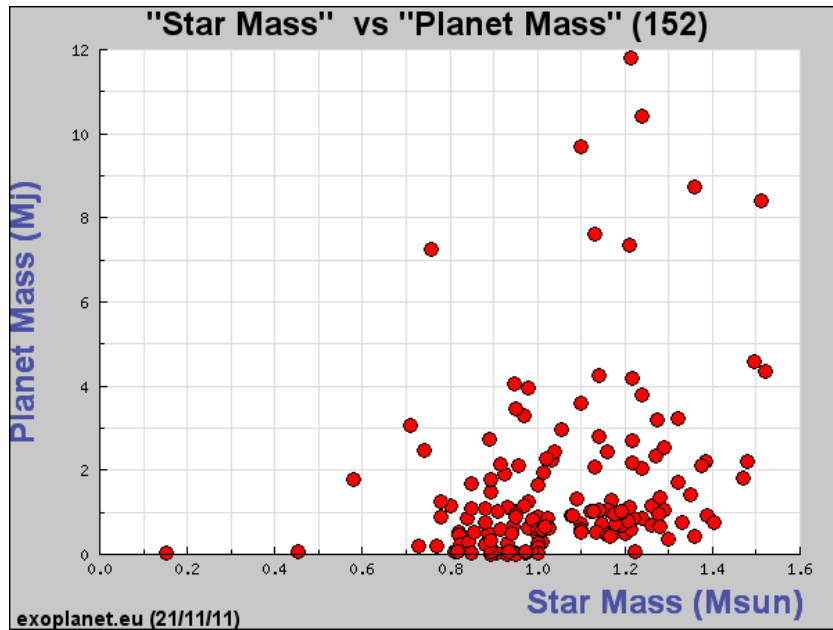
HR8799 c
(Janson et al, 2010)



T_{eff} estimates for HR8799b,
from Bowler et al 2010

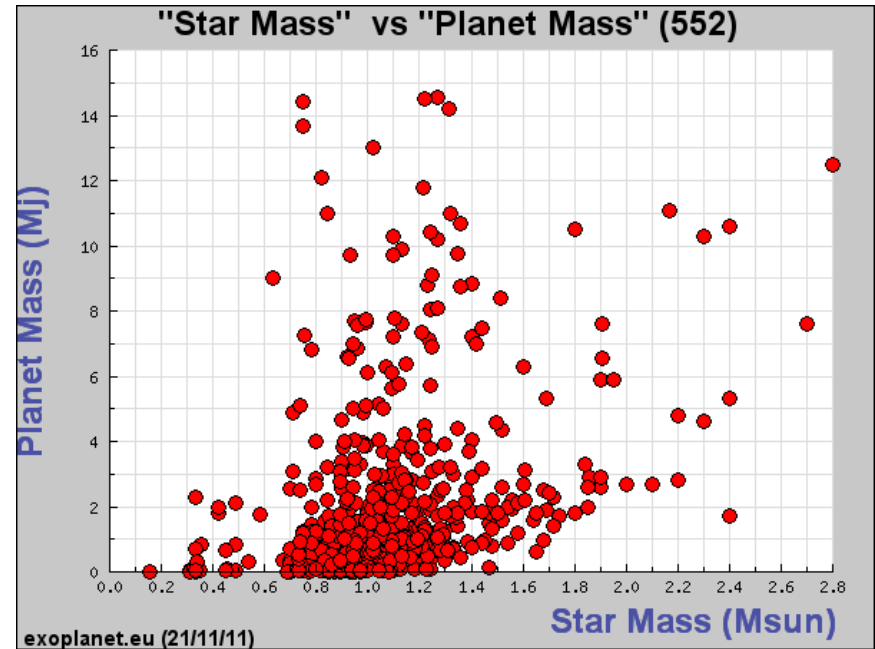
Planets around A-type stars *indirect detections*

Transit

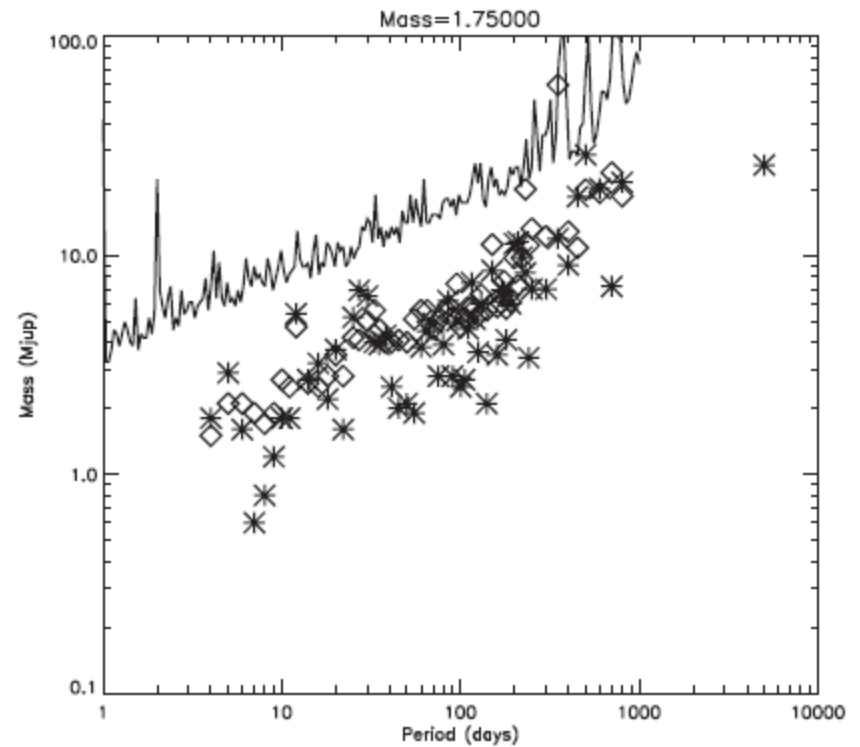
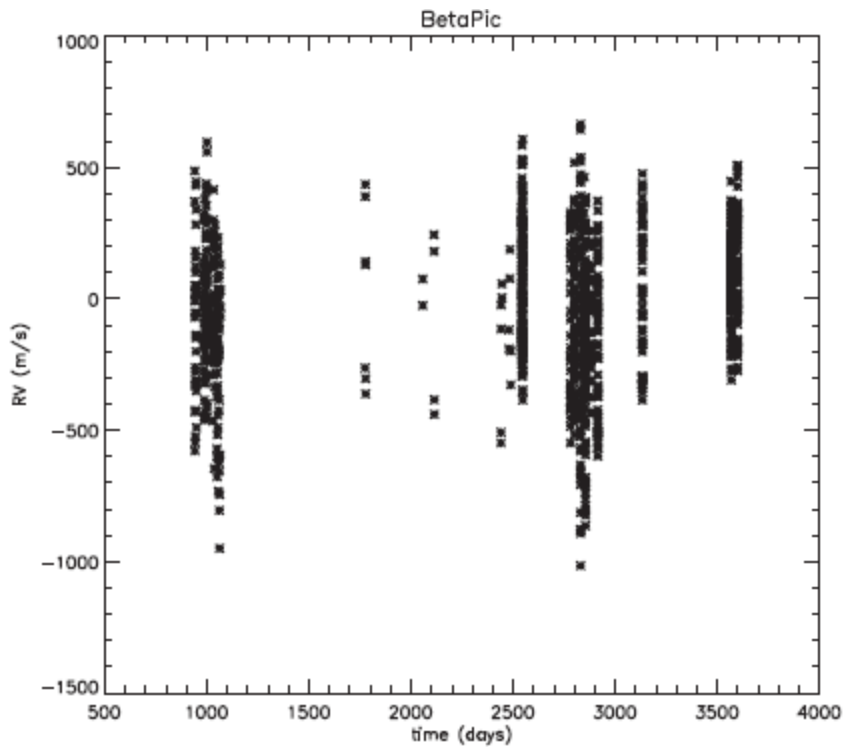


one A-type star: Wasp33

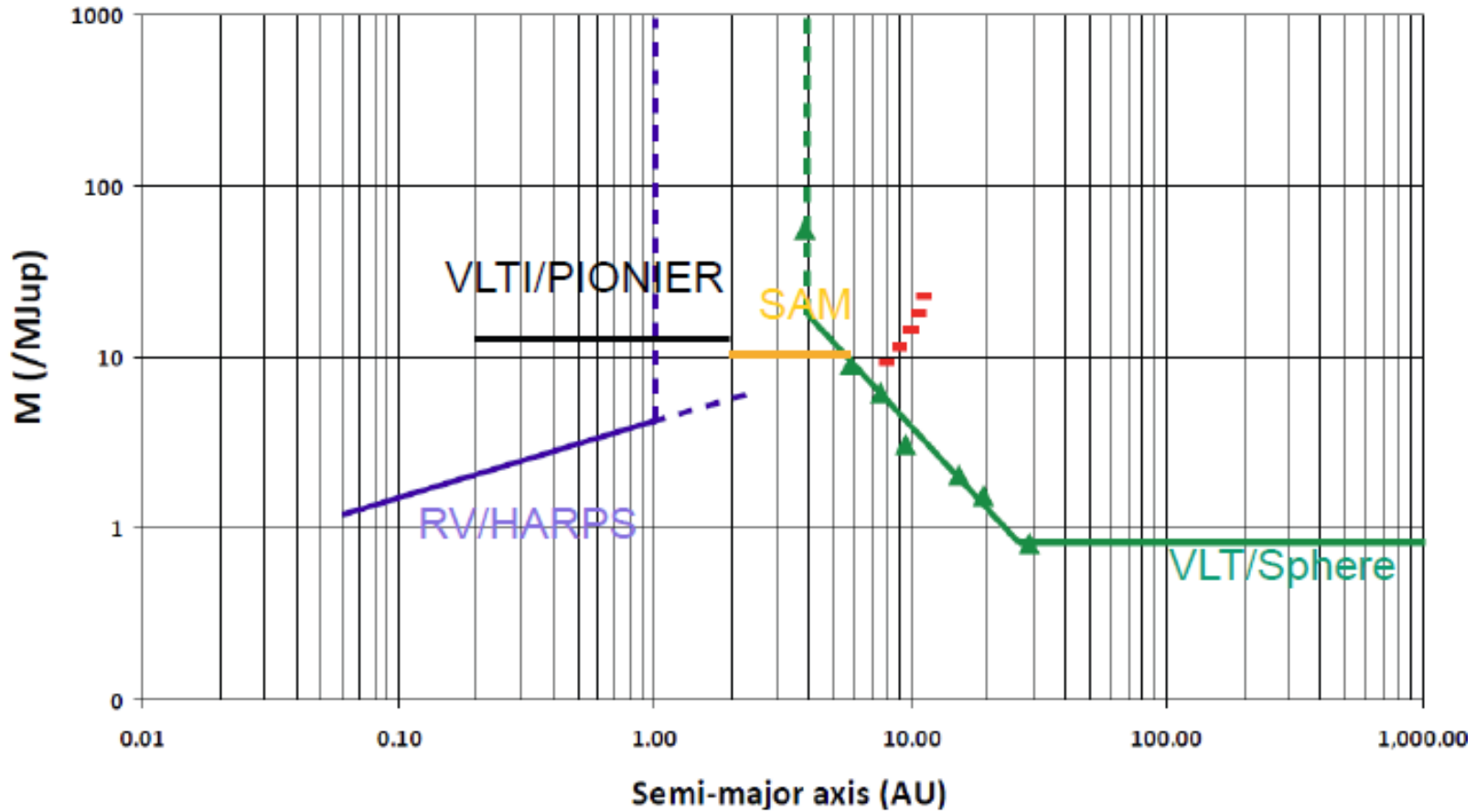
RV



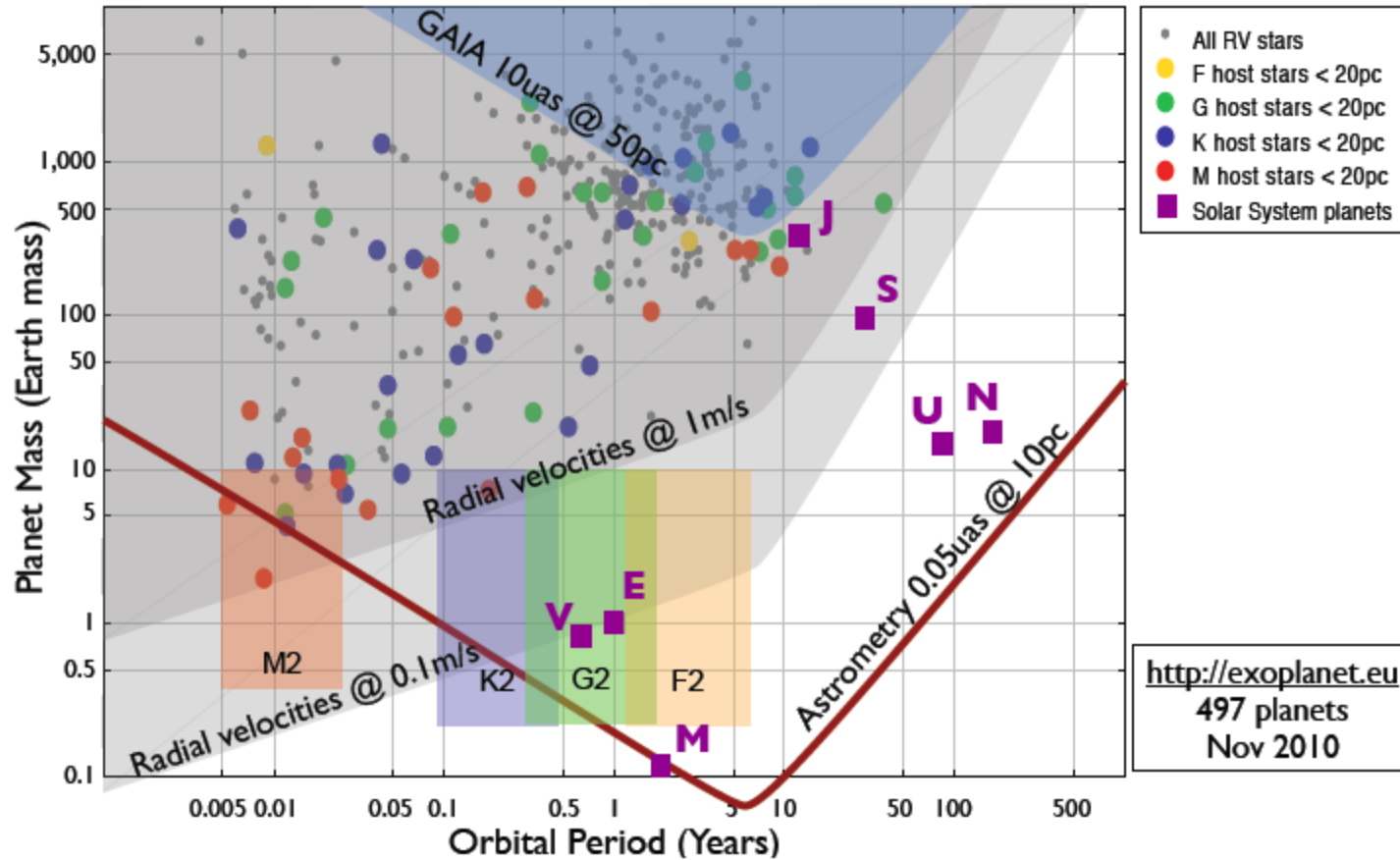
no A-type star so far; yet feasible,
depending on jitter and obs
strategy



Bpic: A5V, $v \sin(i) = 120$ km/s; jitter: 300 m/s rms
(Lagrange et al, 2011)



Bpic: A5V, $v \sin(i) = 120$ km/s; jitter: 300 m/s rms



NEAT performances very valuable on the most interesting A-type stars, *with adapted (pulsations/activity, outer companions) visit-strategy*

