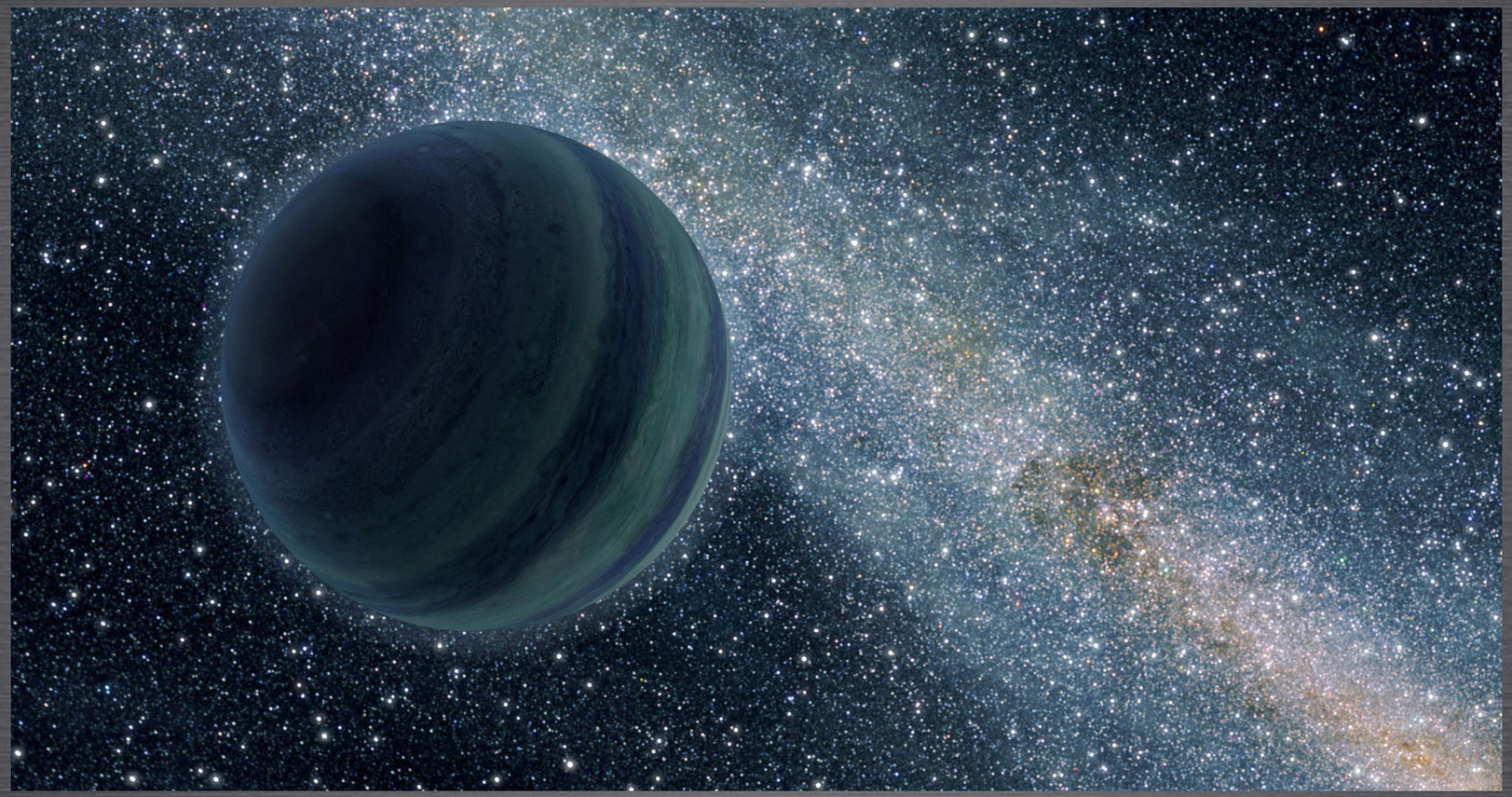

Credit ; NASA/JPL-Caltech

Locating the Young, Isolated Planetary-Mass Objects

Sagan Fellowship Preview Slides

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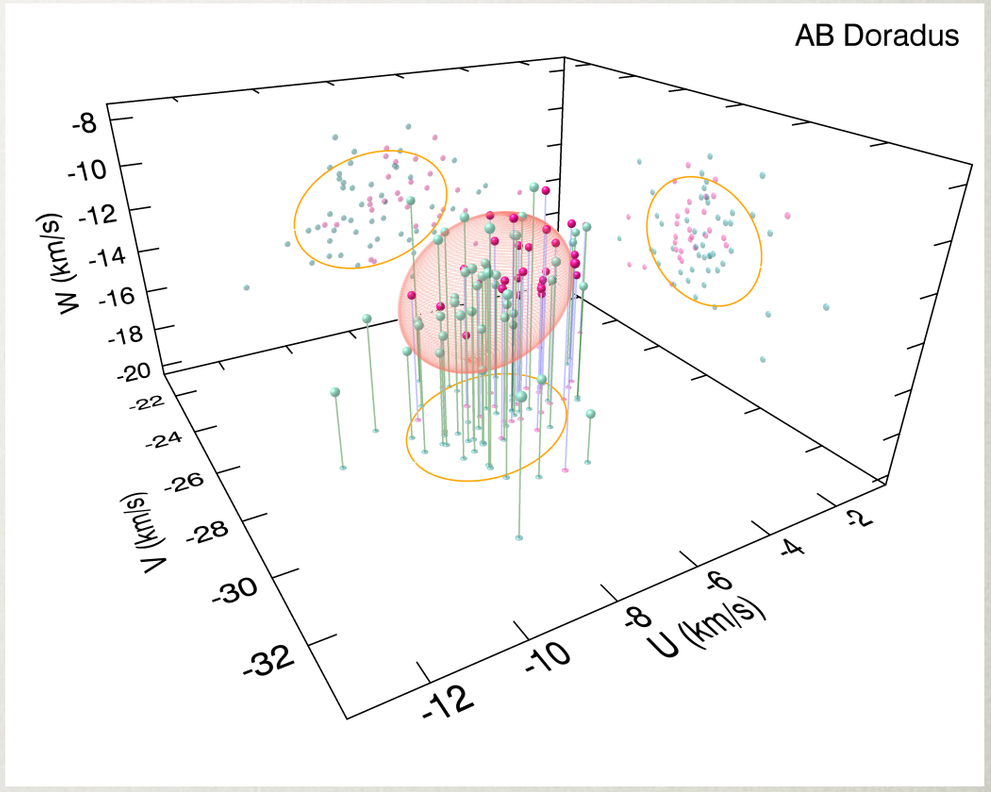
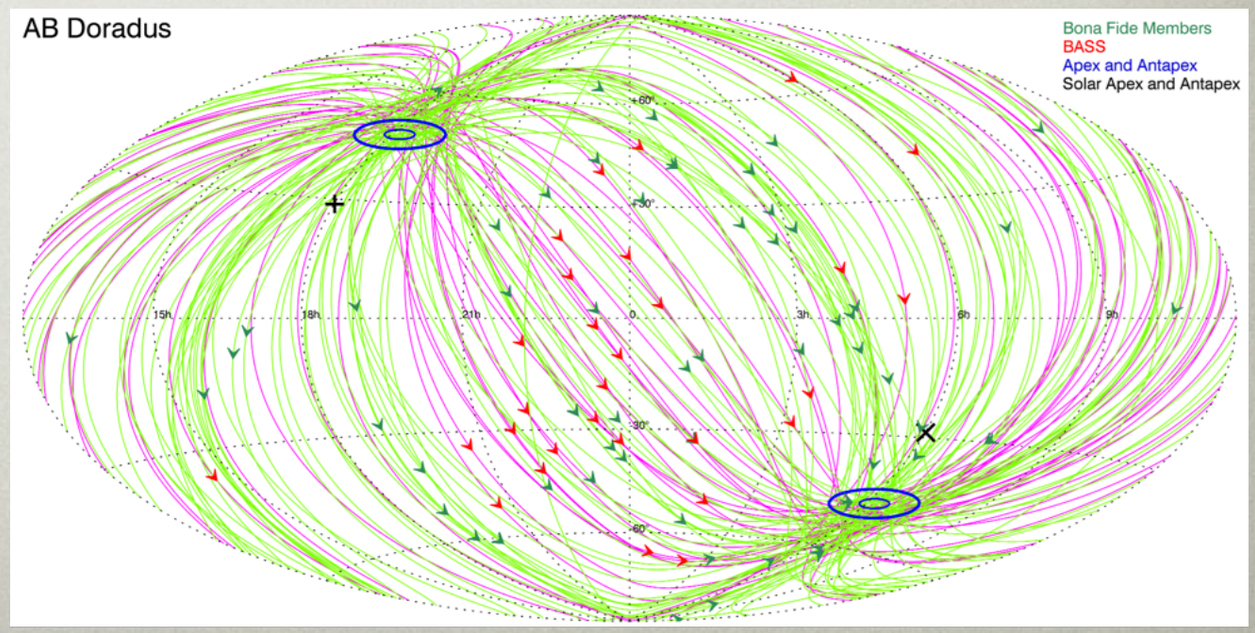
Moving Groups 1/4

- Groups of young coeval stars (typically < 200 Myr)
- Born from the same molecular cloud
- Share similar galactic velocities
- Nearby = Spread-out on the sky
- Young objects are hotter, brighter
- Known age means we can estimate their mass
- Perfect to hunt for isolated planetary-mass objects !





Gagné et al. 2015 (ApJ, 798, 73)

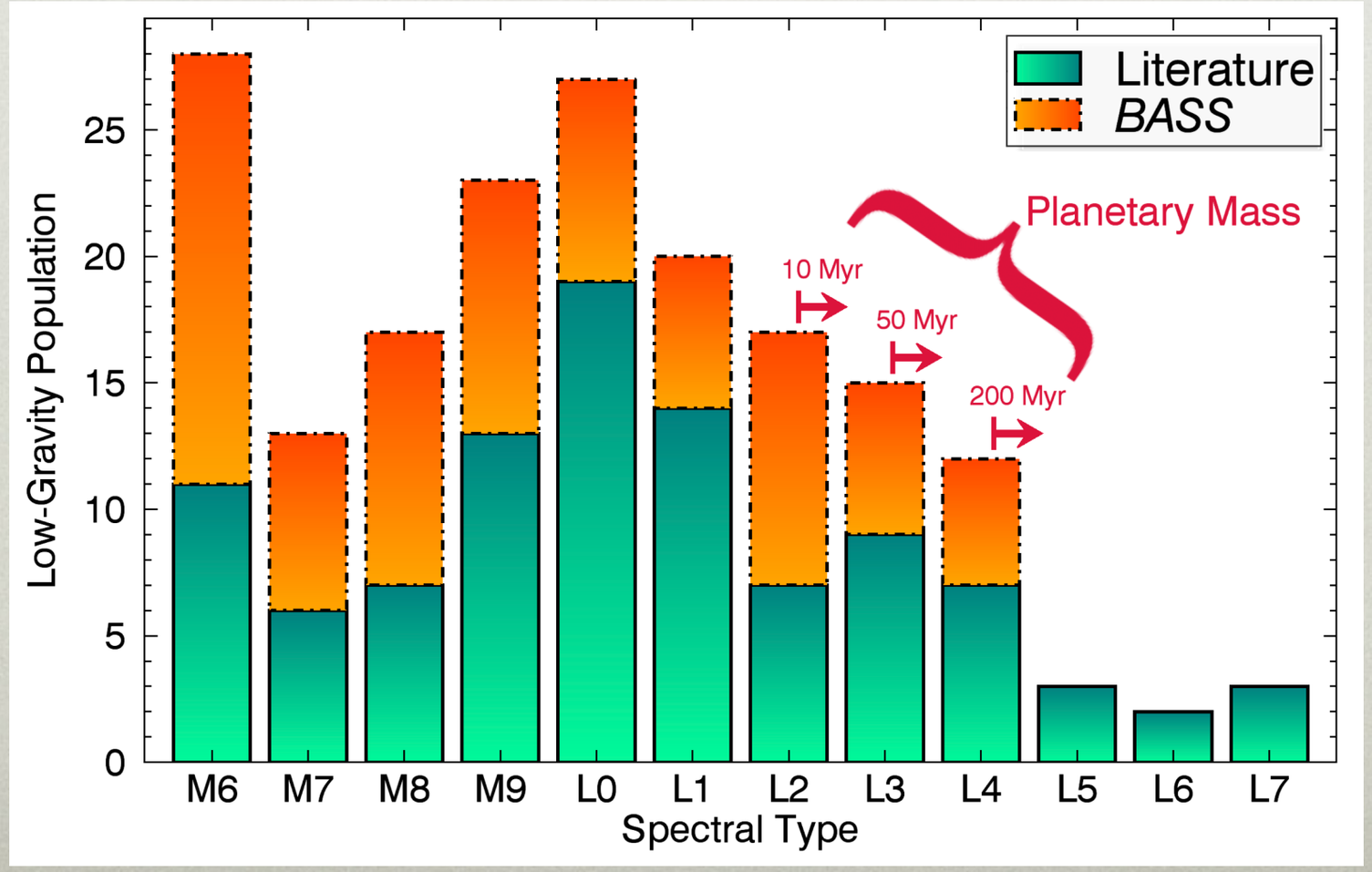
The BASS Survey 2/4

=> BASS is the BANYAN All-Sky Survey, my PhD project

=> We discovered ~ 50 NEW young brown dwarfs with BASS

=> + We identified new signs of youth in ~ 30 KNOWN dwarfs

=> We are just entering the planetary-mass regime ! Now we want to delve deeper...



Gagné et al., in preparation

The Initial Mass Function 3/4

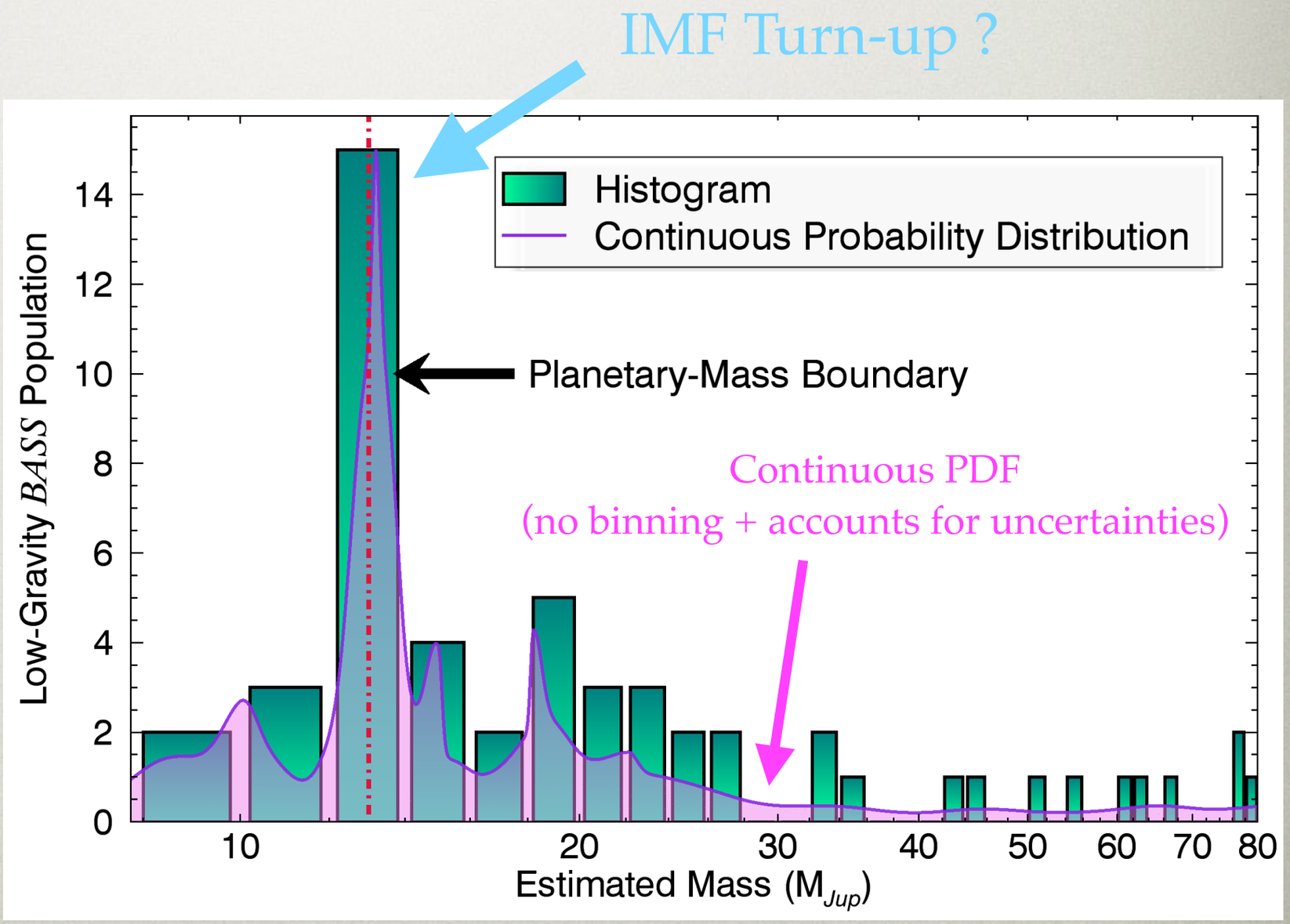
Histogram of estimated masses for young brown dwarfs in BASS :

We found many ~13 M_{Jup} objects !

=> BASS was not very sensitive to < 13 M_{Jup}

=> Could be a low-mass turn-up in the initial mass function

=> Does this turn-up hold at lower masses ?

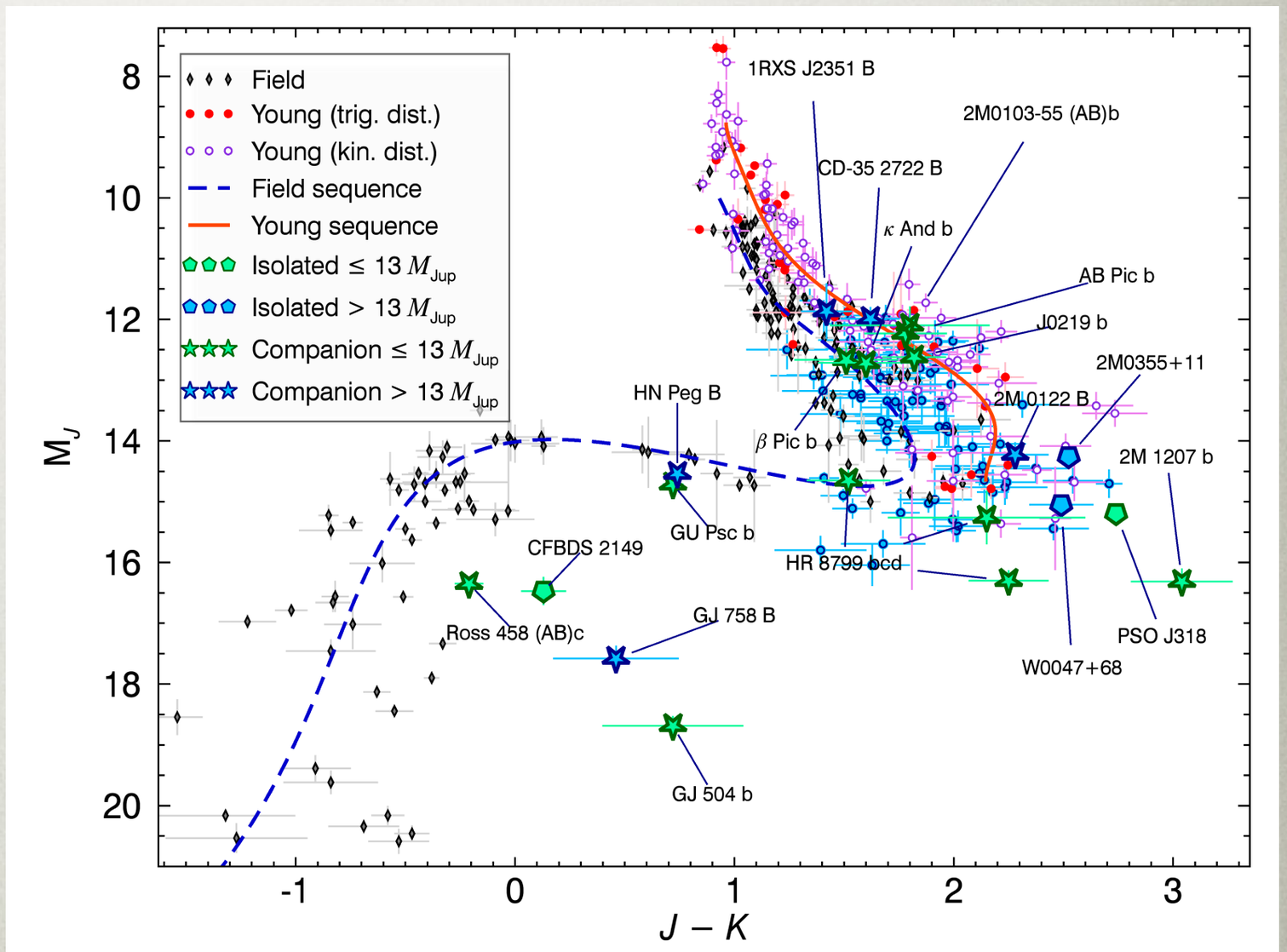


Gagné et al., in preparation

The brown dwarf/exoplanet connection

Color-Magnitude Diagram for field / young brown dwarfs :

- Young brown dwarfs have thick clouds, like giant planets
- Blue circles = new prototype L/T transition young brown dwarfs
- What happens with their clouds at lower temperatures ?
- They might sink below the photosphere
- We want to exploit the brown dwarf to exoplanets connection



Gagné et al., in preparation