Is the IMF universal?
Latest results from the UKIDSS GCS

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Collaborators & References

Pleiades:

Lodieu, Dobbie, Deacon, Hodgkin, Hambly, & Jameson 2007, MNRAS, 381, 712

IC 4665:

Lodieu, Carraro, de Wit, Hambly, Moraux, & Bouvier 2009, in preparation

Upper Sco:

Lodieu, Hambly, Jameson, & Hodgkin 2008, MNRAS, 383, 1385

Lodieu, Hambly, Jameson, Hodgkin, Carraro, & Kendall 2007, MNRAS, 374, 372

Lodieu, Hambly, & Jameson 2006, MNRAS, 373, 95

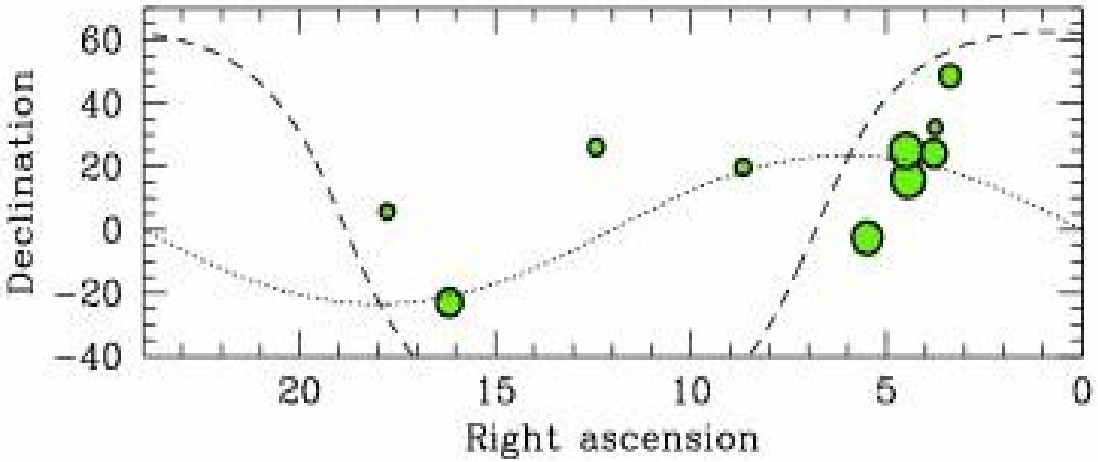
sigma Ori:

Lodieu, Zapatero Osorio, Rebolo, Martín & Hambly 2006, submitted to A&A

The UKIDSS Galactic Clusters Survey

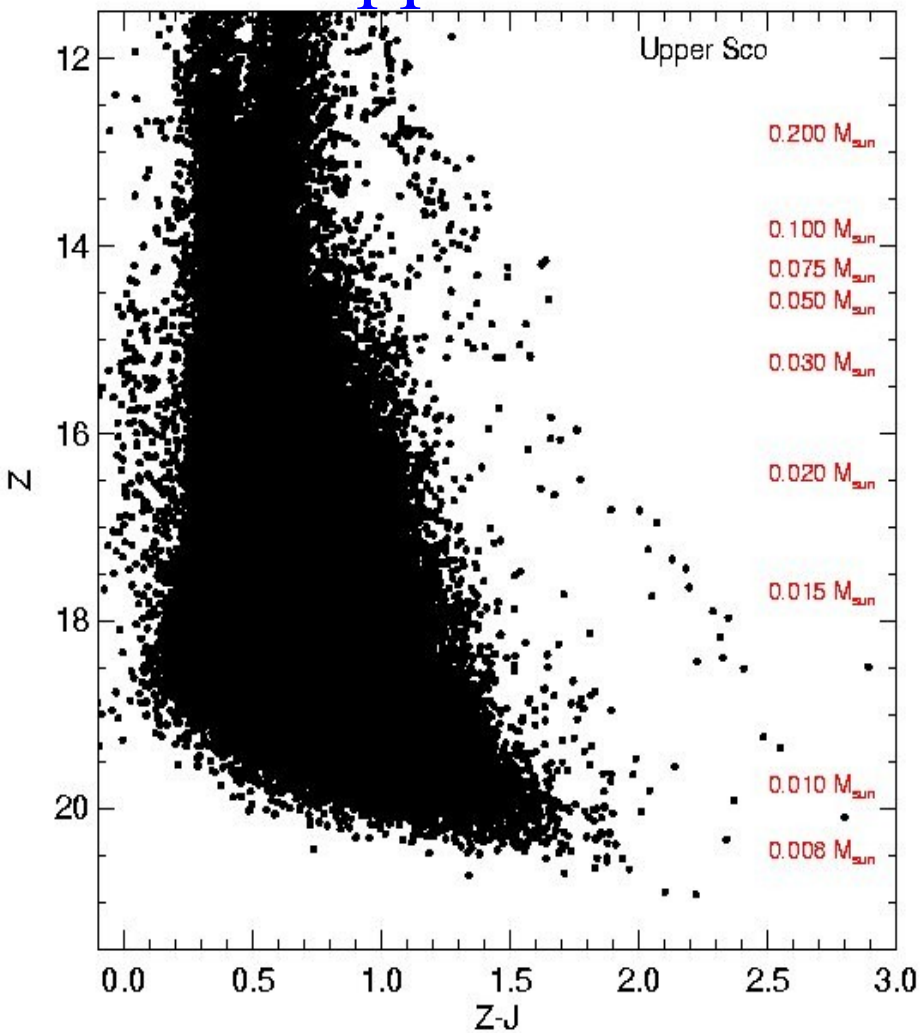
- *ZYJHK* observations
- 1000 square degrees
- 10 star-forming regions and open clusters
- 2 epochs in the *K*-band for proper motions
- 5 sigma completeness limits: *Z*=20.4, *J* = 19.6, *K* = 18.2 mag

Priority	Name	Type	RA	Dec	Area sq. degs
			J2000		
1	Pleiades	open cluster	03 47	+24 07	79
2	Alpha Per	open cluster	03 22	+48 37	50
3	Praesepe	open cluster	08 40	+19 40	28
4	IC 4665	open cluster	17 46	+05 43	0.8
5	Taurus-Auriga	SF assoc.	04 30	+25 00	386
6	Orion	SF assoc.	05 29	-02 36	314.2
7	Sco	SF assoc.	16 10	-23 00	154
8	Per-OB2	SF assoc.	03 45	+32 17	12.6
9	Hyades	open cluster	04 27	+15 52	292
10	Coma-Ber	open cluster	12 25	+26 06	78.5

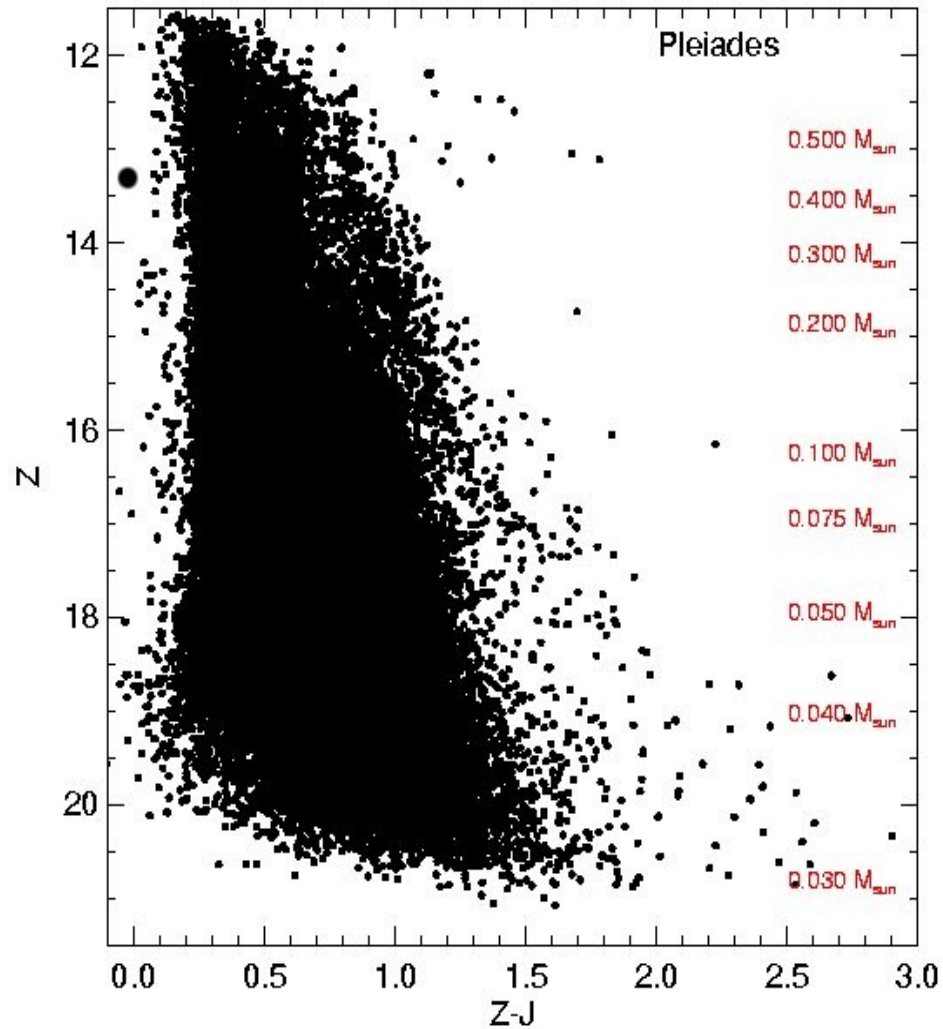


Photometric selection

Upper Sco



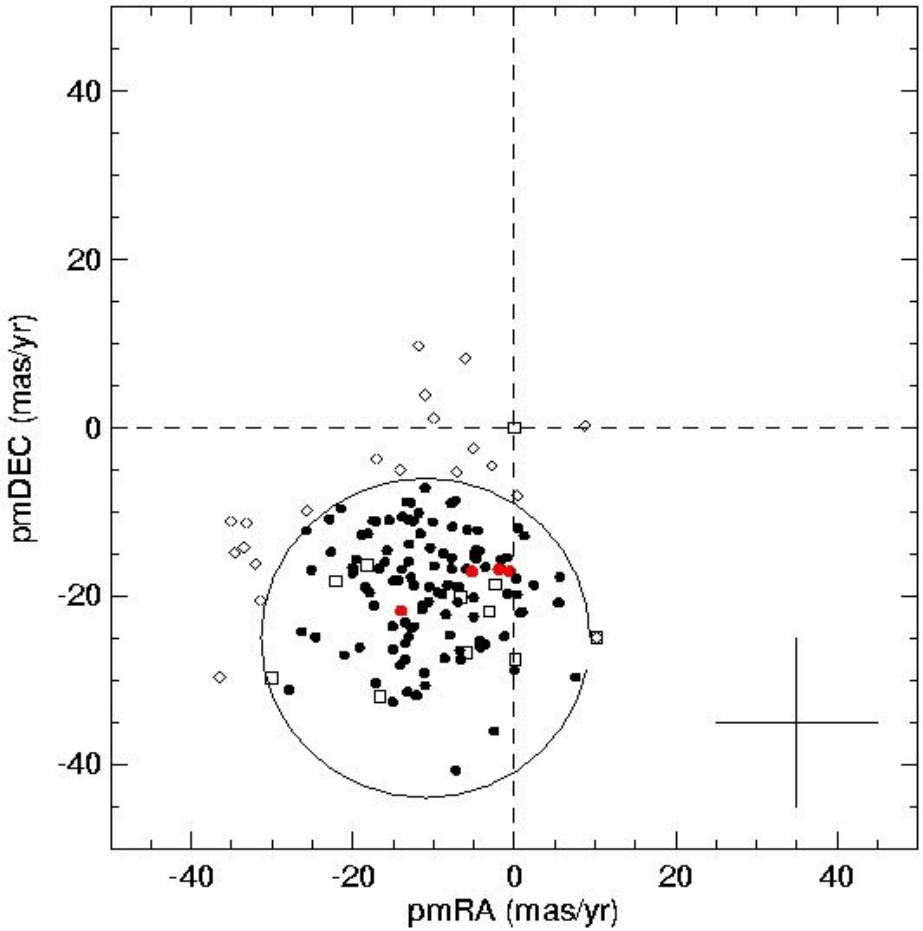
Pleiades



Photometric selection based on several colour-colour magnitude diagrams. Starting with the (*Z-J*,*Z*) diagram and followed by the photomatric selection in the (*Y-J*,*Y*) and (*J-K*,*J*) diagrams

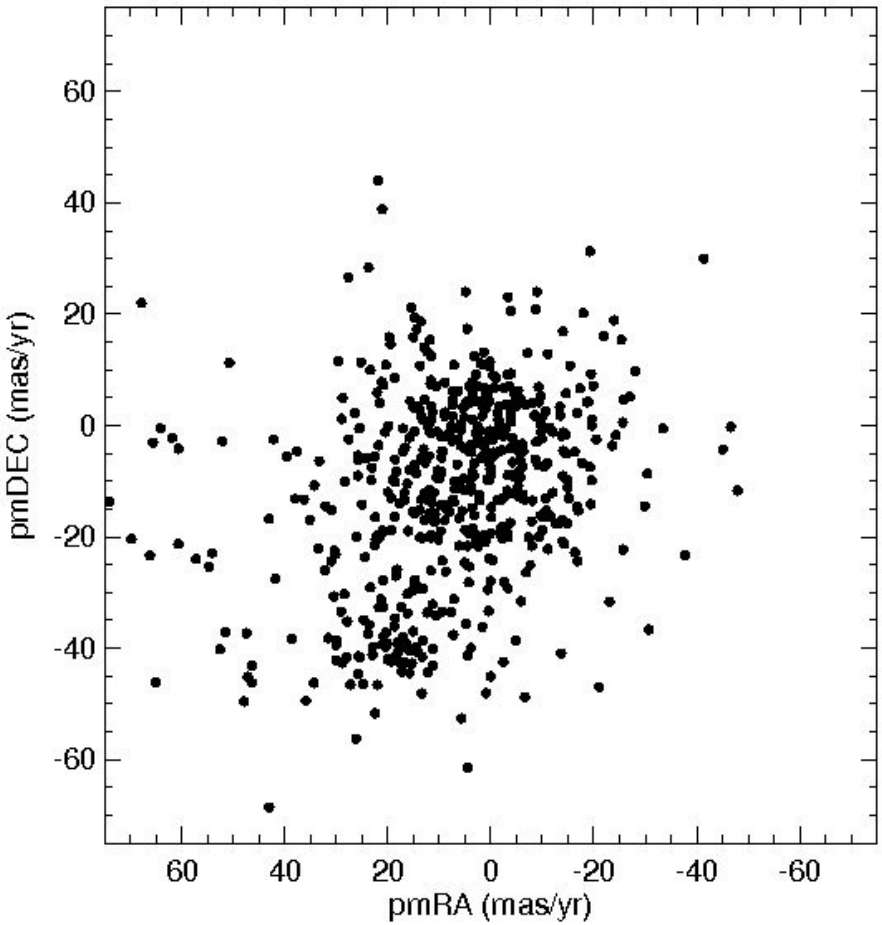
Proper motion selection

Upper Sco



Bright sources: 2MASS vs GCS

Pleiades

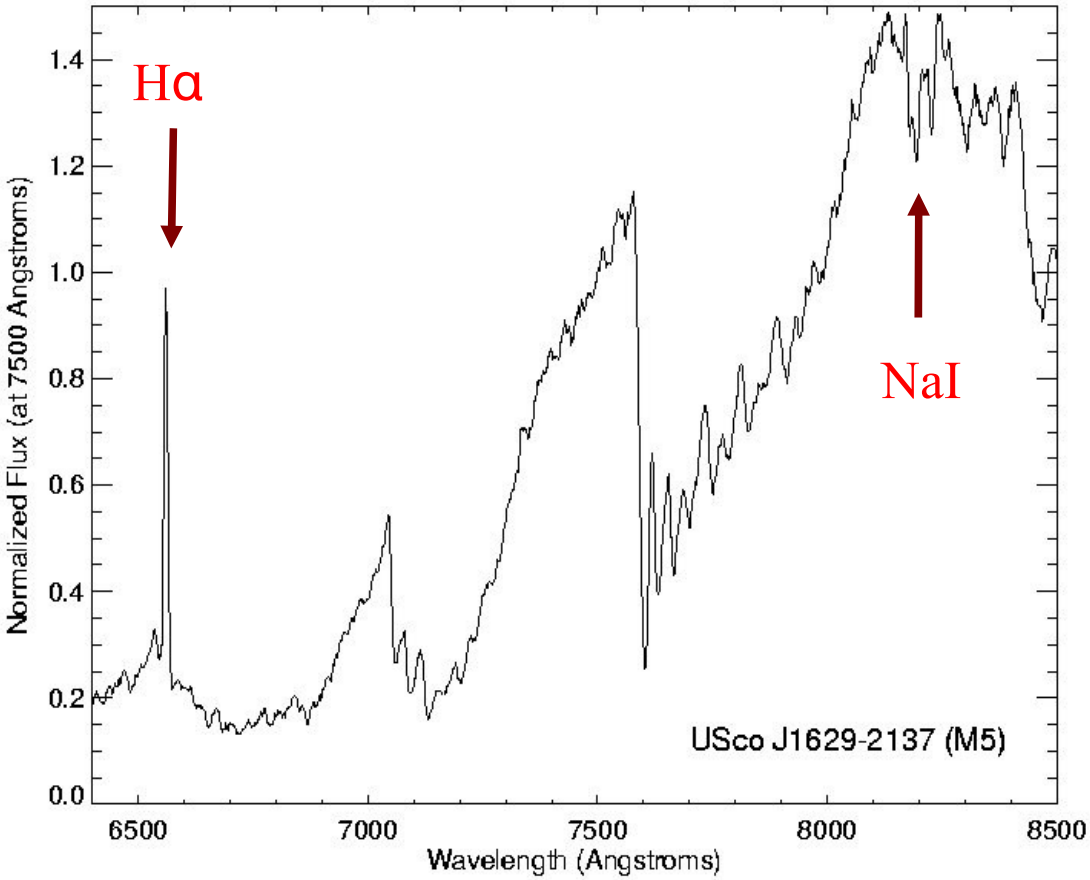


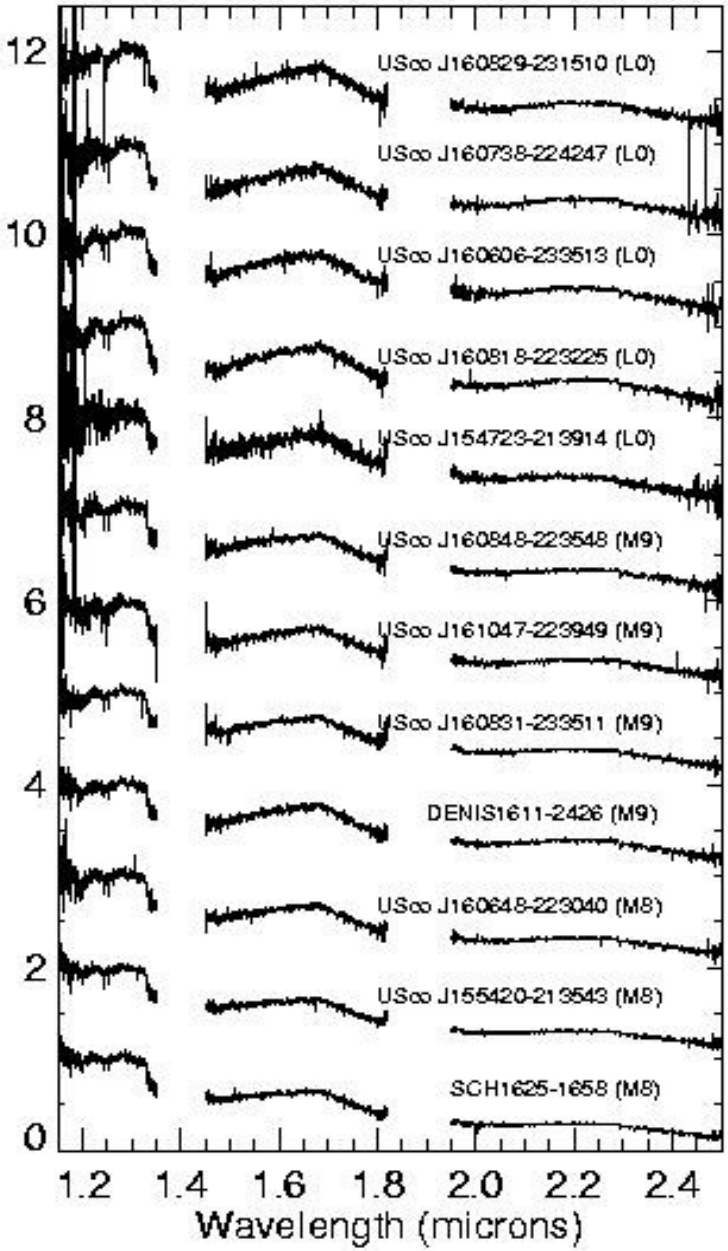
Faint sources: (INT+CFHT) vs GCS

Cross-correlation between 2MASS and GCS

Proper motion selection using the vector point diagram

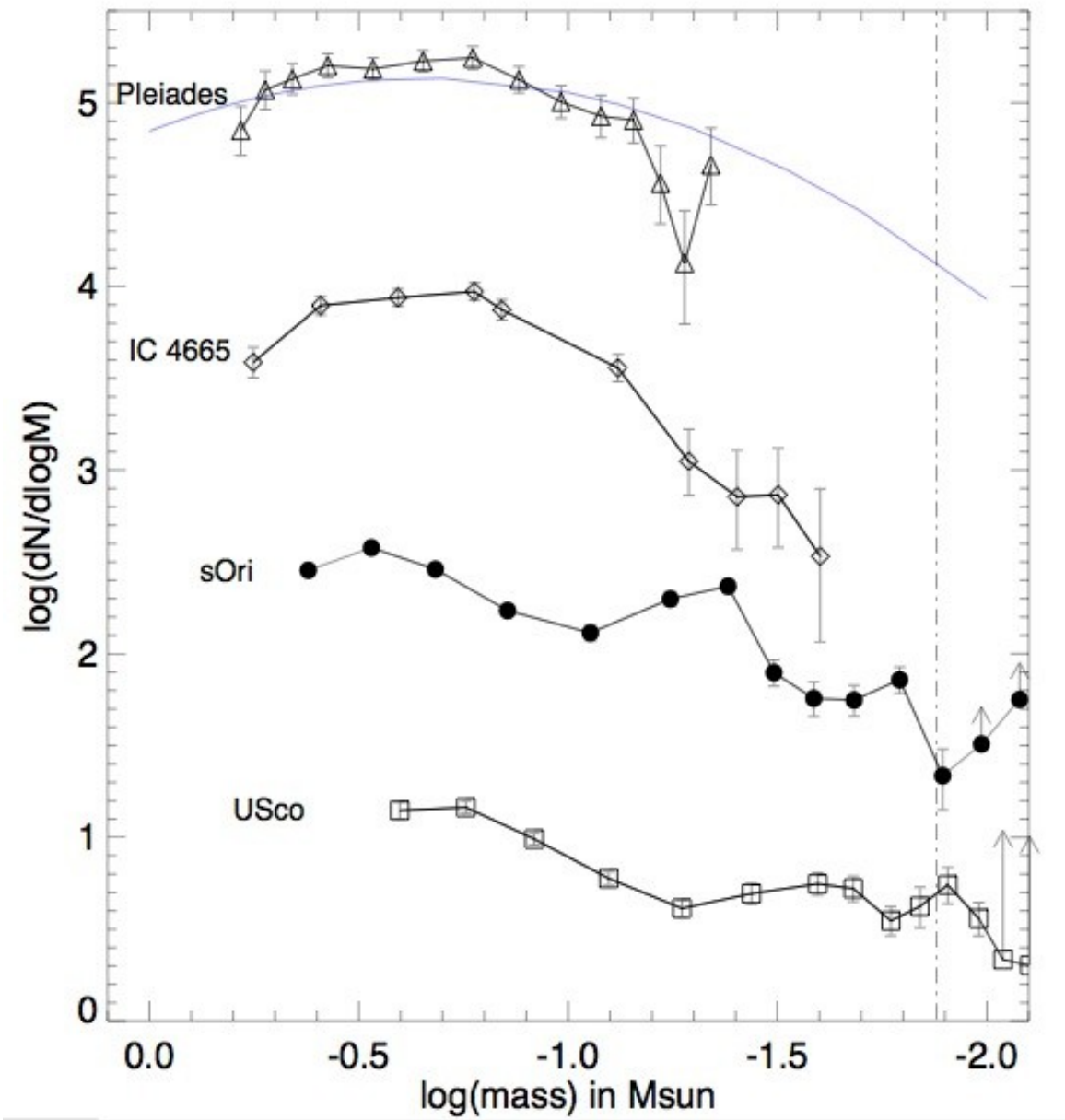
Spectroscopic follow-up





Optical + NIR spectroscopy: Gravity sensitive features and overall shape of the spectra

The Mass Function



- Mass-magnitude relation

  NextGen & DUSTY models from the Lyon group

- Results:

  Mass functions appear universal and well represented by the log-normal functions proposed by Kroupa (2002) & Chabrier (2003) down to 30 $M_{Jupiter}$

  Under the assumption of a universal log-normal IMF, our results indicate that the characteristic mass might be lower and the mass-scale (or width) higher

The power of the GCS

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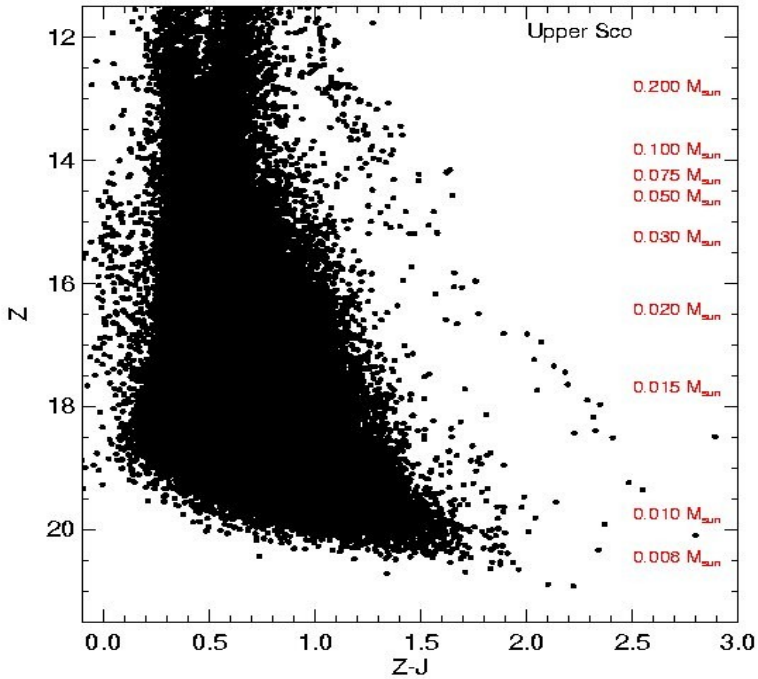

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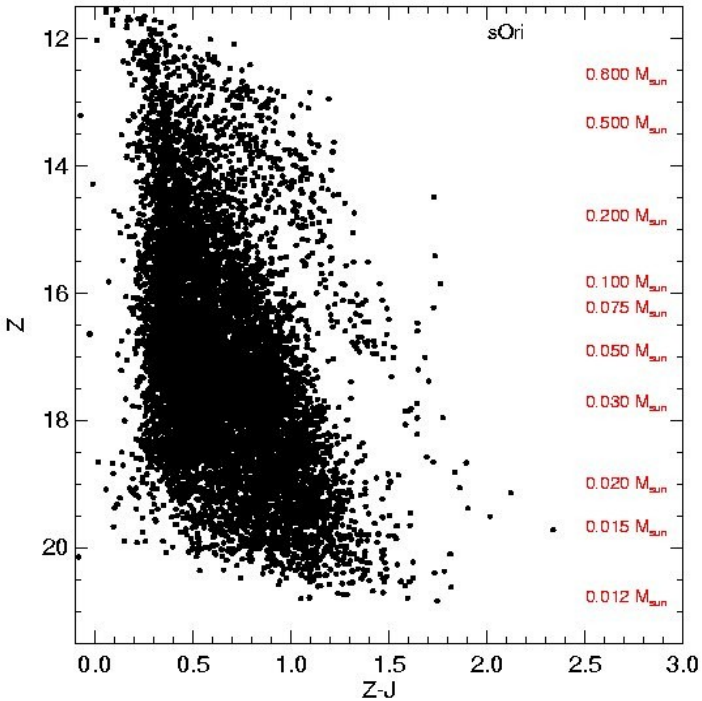
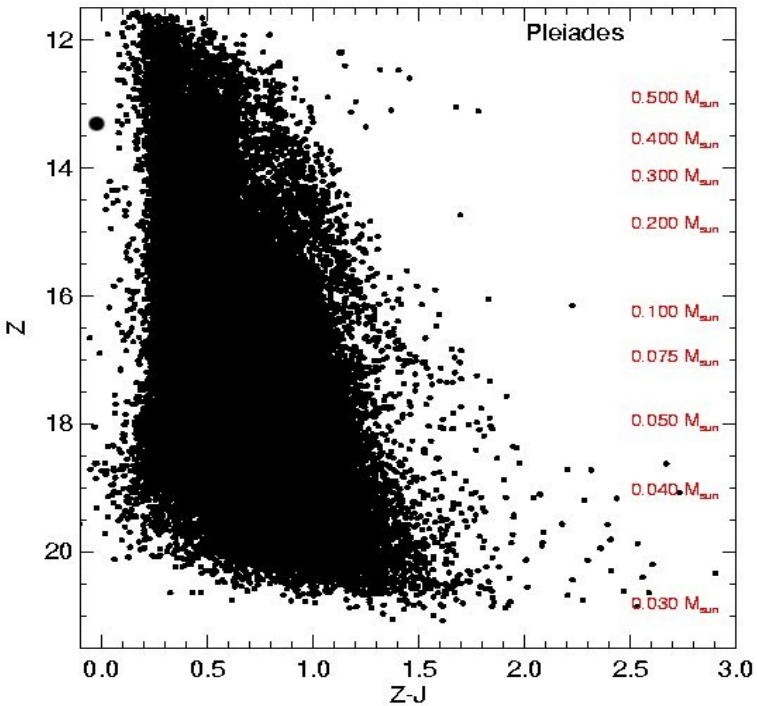
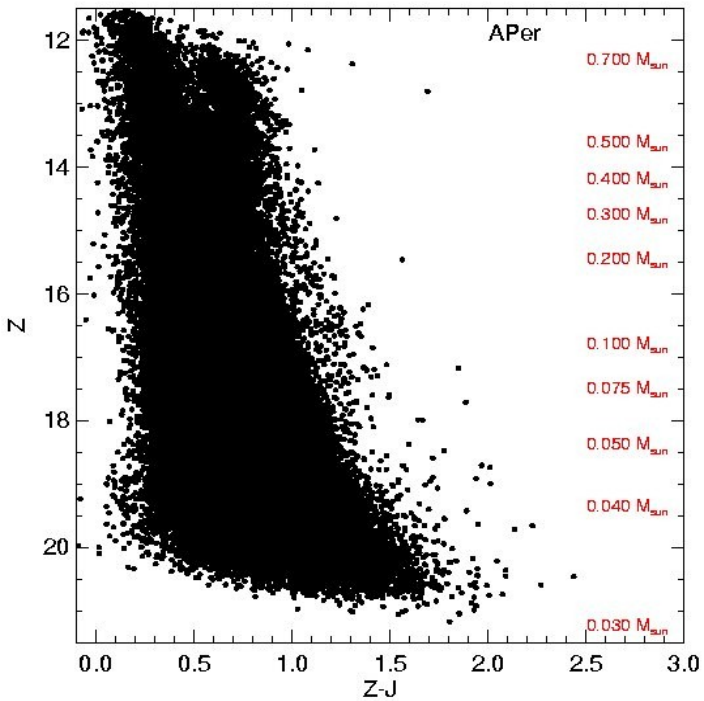


Pleiades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