

THE BOLOMETRIC LUMINOSITY FUNCTION FOR THE LOWEST MASS STARS

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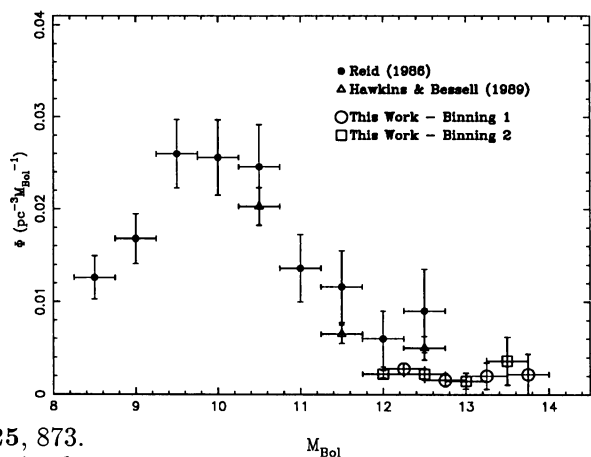
ABSTRACT. We present a luminosity function (LF) for the coolest stars in three POSSII fields - extending earlier LFs to much lower masses at higher precision than has been achieved previously.

1. The Survey

Although the subject of several studies in recent years, the form of the LF for extremely low mass stars ($M_{Bol} \gtrsim 12$ or $M \lesssim 0.1M_{\odot}$) remains poorly sampled. These stars are rare and emit most of their flux in the infrared making optical colour magnitude diagrams almost useless (cf. Monet *et al.* 1991, Fig.10). To remedy this, we are carrying out a survey covering 10 POSSII fields (over 300 square degrees) to a depth of $I < 18$. Lists of low mass candidates are compiled with $R-I > 2.1$ and all of these stars are being observed at K-band. The I-K colour so measured allows us to estimate M_{Bol} more precisely than can be done by purely optical studies. Our new measurement rules out the possibility of a LF steeply increasing towards the brown dwarf limit.

Figure 1. Previous functions by Reid (1986, solid dots) & Hawkins & Bessell (1988, open triangles) are shown. Two binnings of our function are shown.

1/ V_{Max} Bolometric Luminosity Function for the Lowest Mass Stars.



4. References

- Reid, I.N. 1986, *M.N.R.A.S.*, **225**, 873.
Monet, D. *et al.* 1991, *A.J.*, *submitted*, .
Hawkins, M. & Bessell, M. 1988, *M.N.R.A.S.*, **234**, 177.