

Measurements of absolute Ca II H and K flux in FGKM Stars

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Cool Stars 19

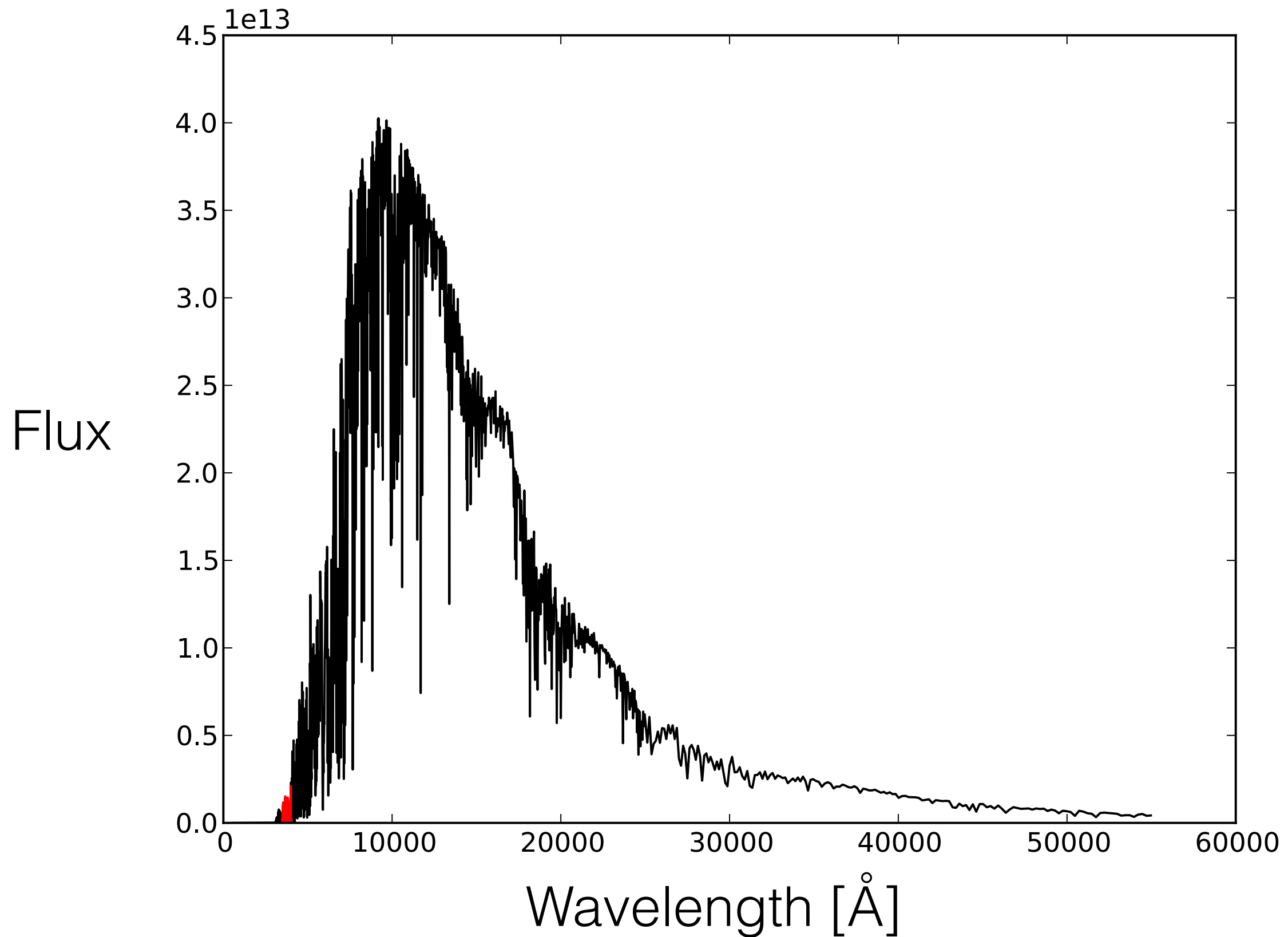
Variability of Solar/Stellar Magnetic Activity - Splinter Session

Uppsala, Sweden

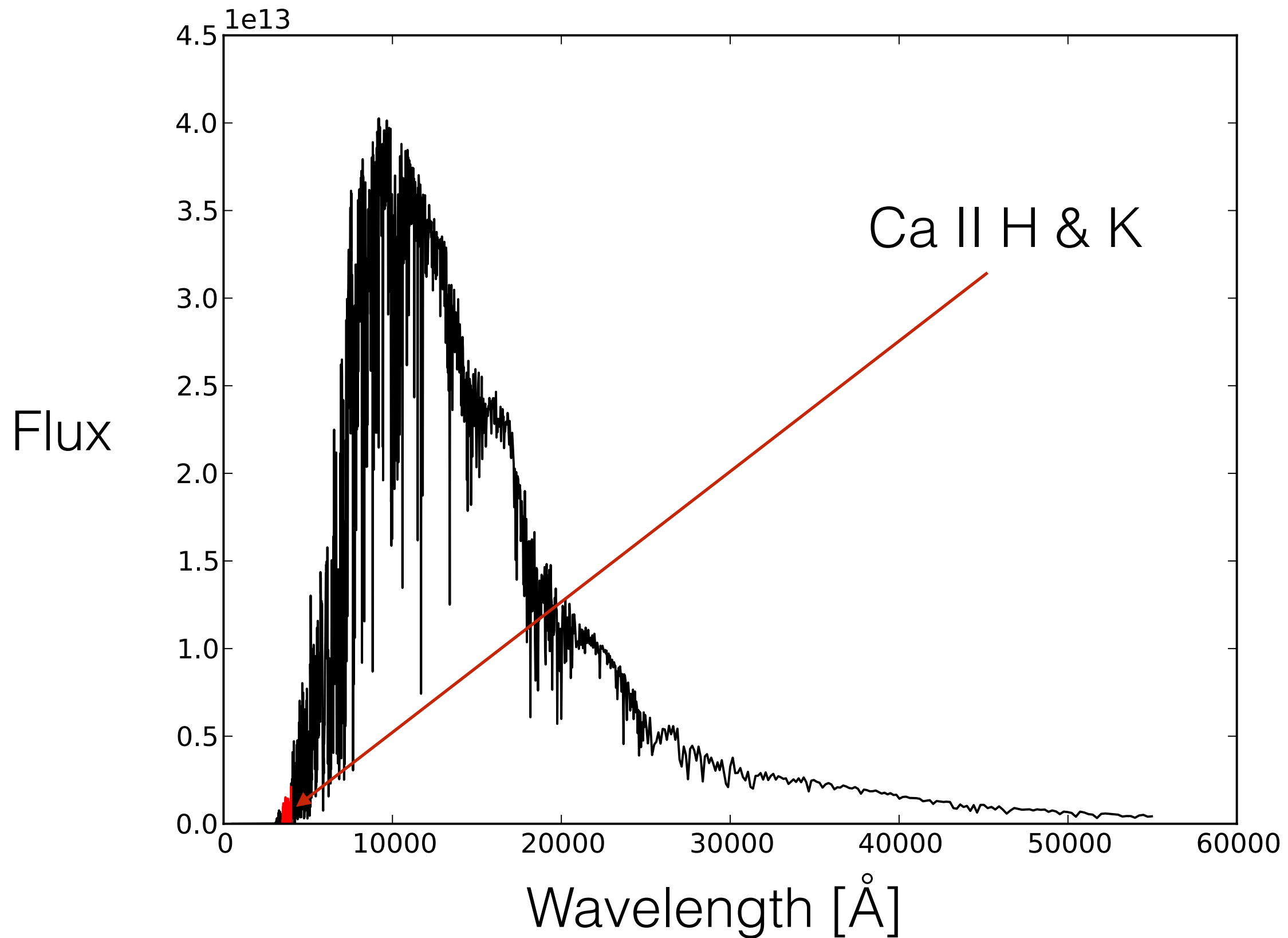
June 7, 2016



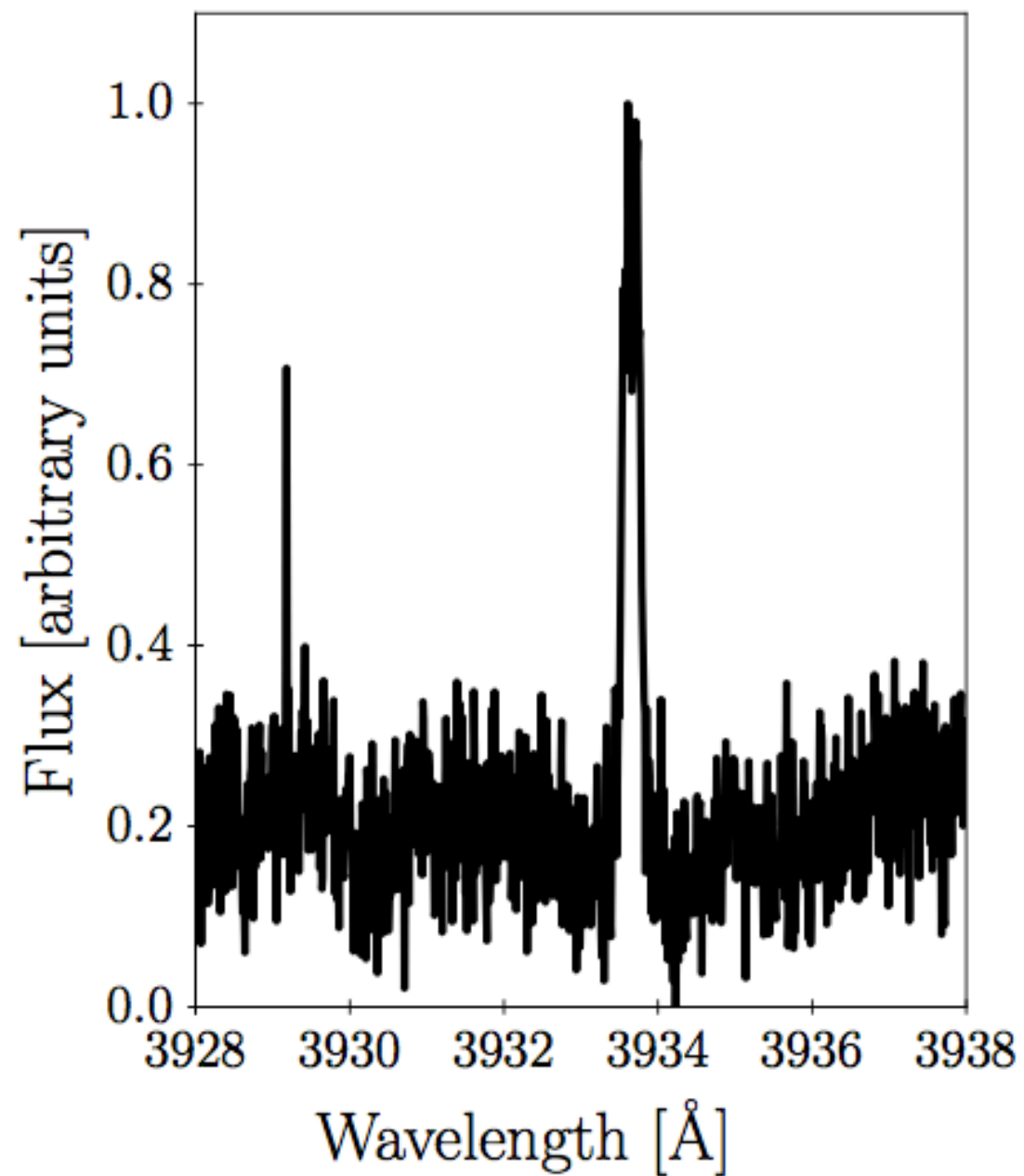
M dwarf spectrum



M dwarf spectrum

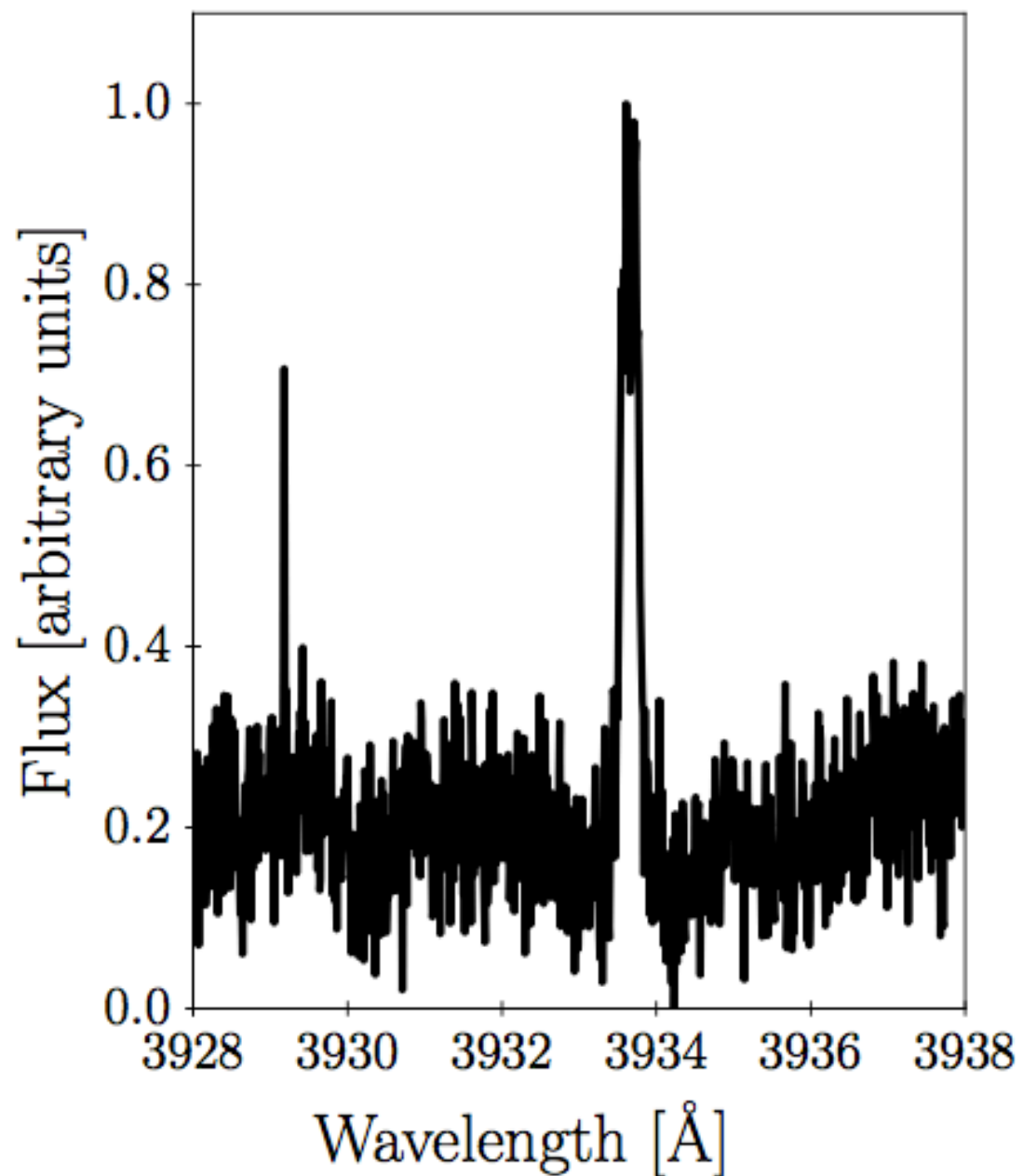


Ca II K line of an M dwarf

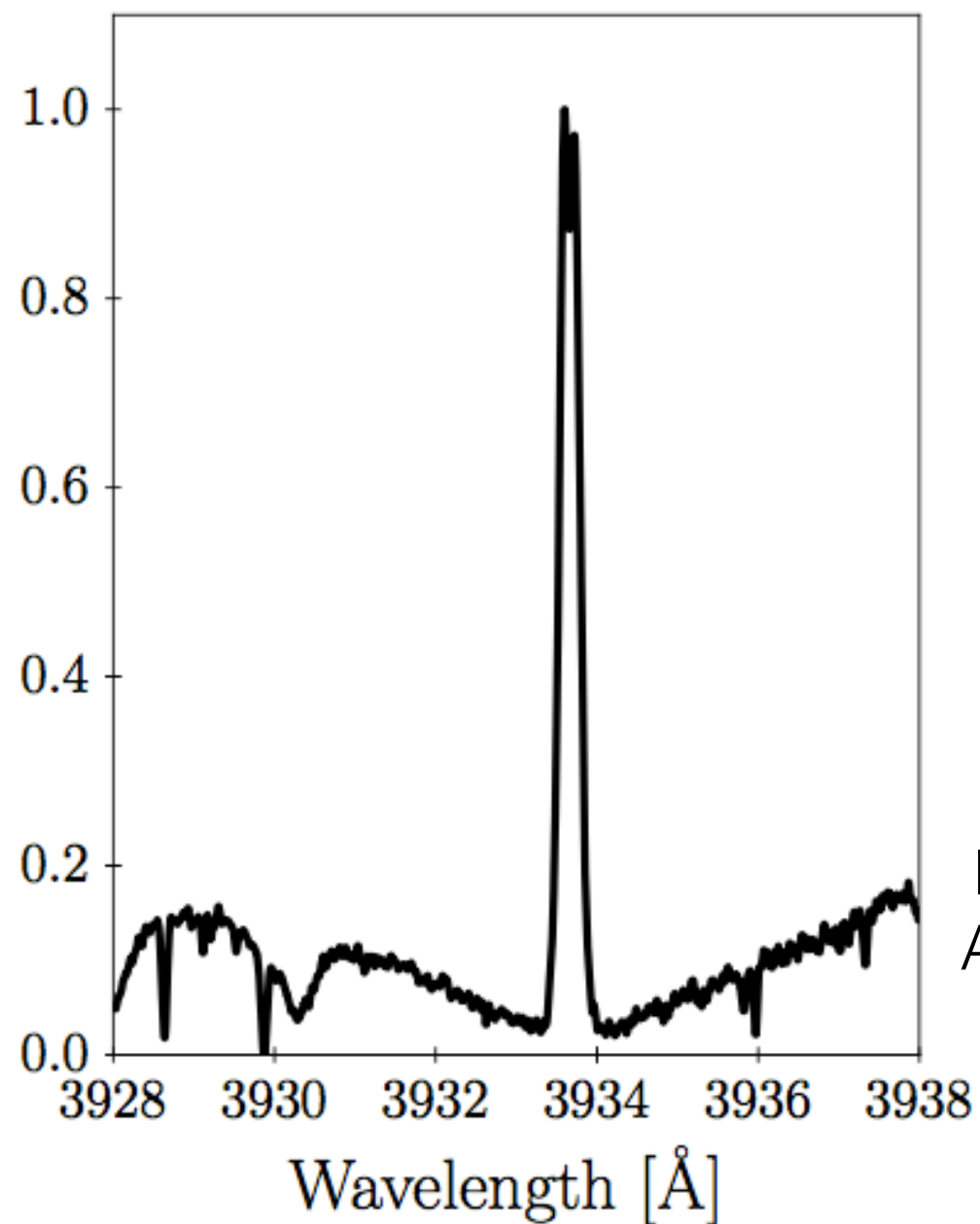


1 observation

Ca II K line of an M dwarf



1 observation



47 observations

HARPS-TERRA:
Anglada-Escudé
& Butler
(2012)

Chromospheric Flux

Surface Flux

Photospheric Flux

$R'_{\text{HK}} = \frac{\mathcal{F}_{\text{HK}} - \mathcal{F}_{\text{phot}}}{\sigma T_{\text{eff}}^4}$

Linsky et al. (1979)

Bolometric Flux

Chromospheric Flux

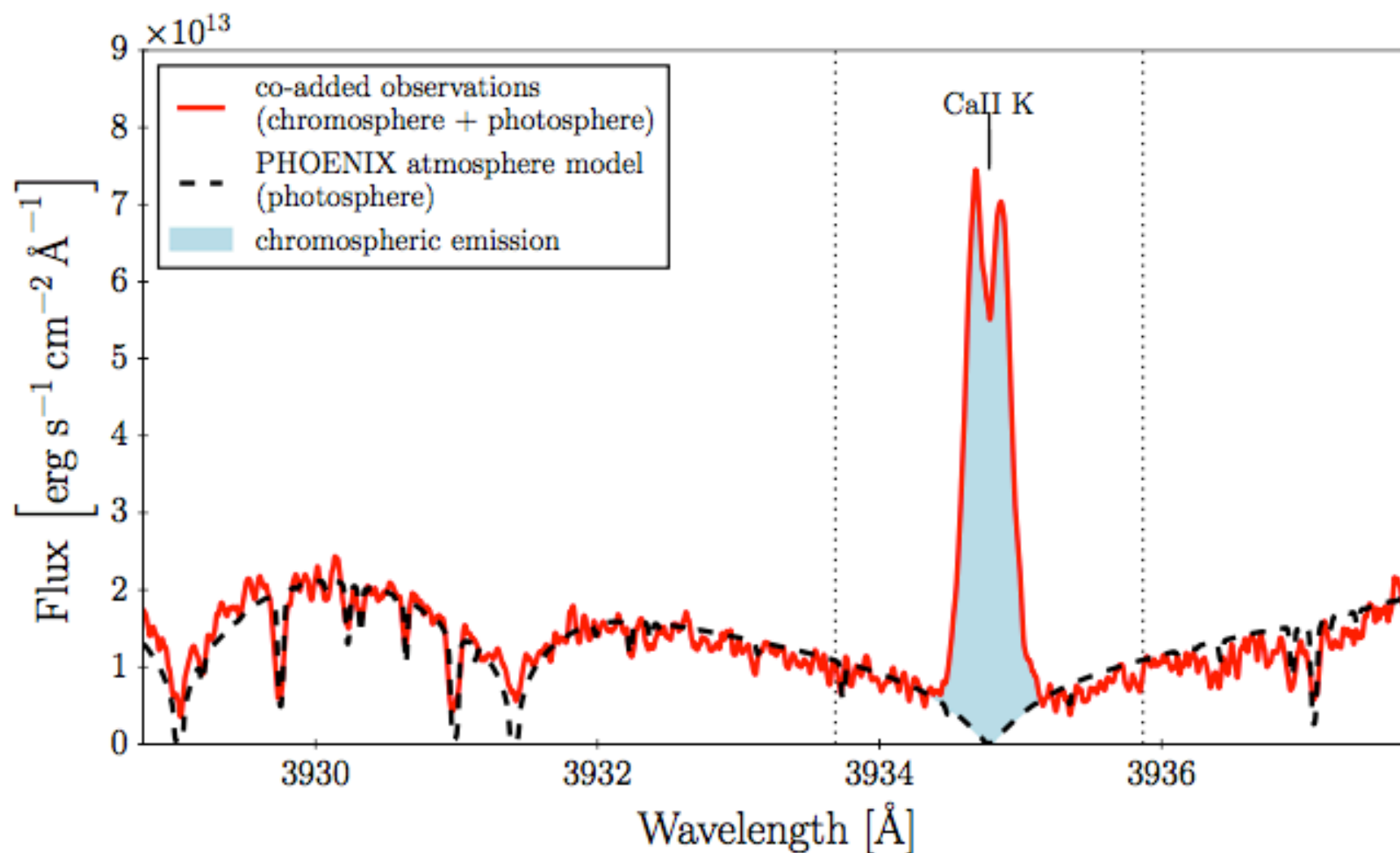
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Bolometric Flux



PHOENIX grid:
Husser et al. (2013)

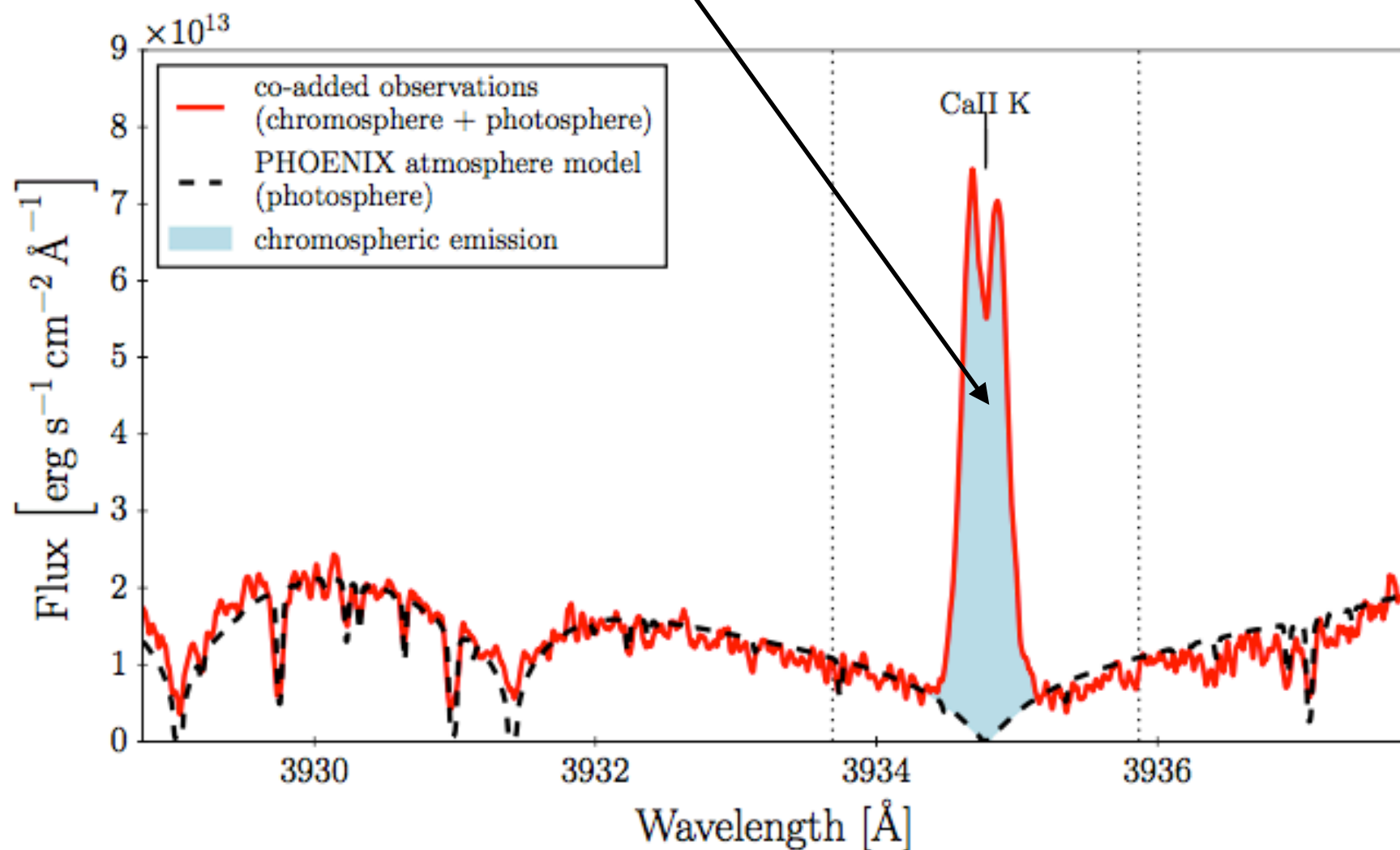
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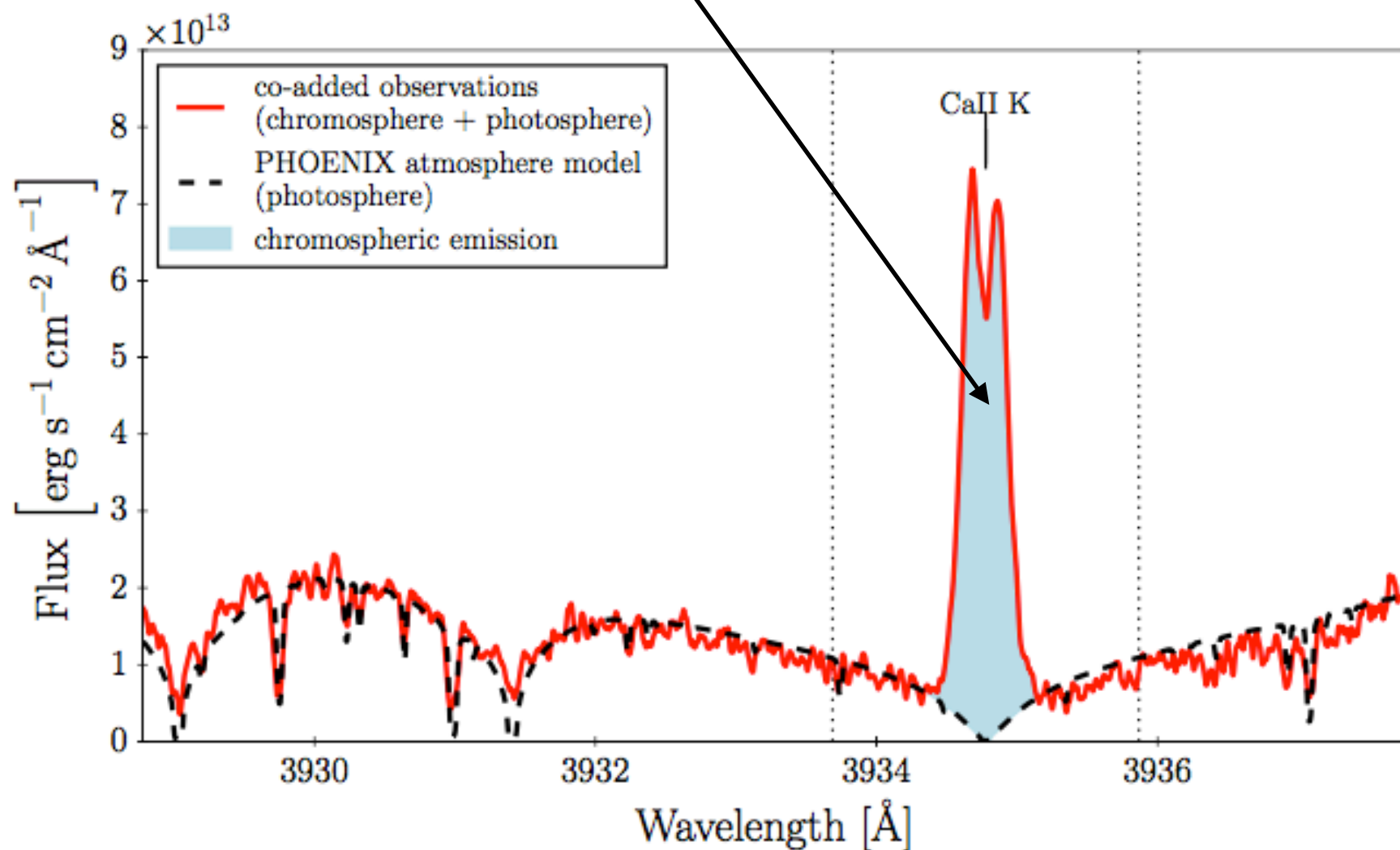
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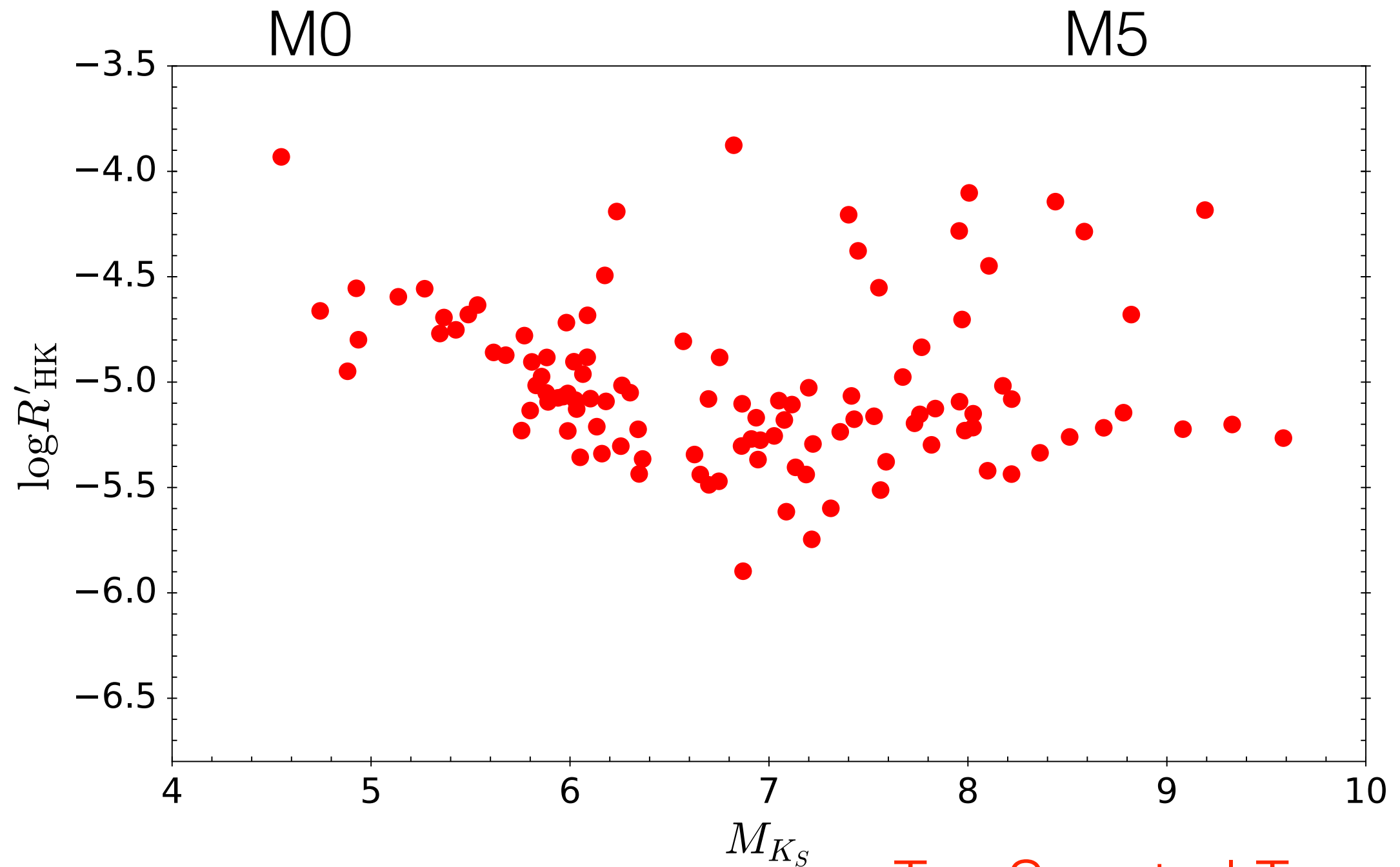
Bolometric Flux



Need stellar
parameters,
especially T_{eff} !

PHOENIX grid:
Husser et al. (2013)

102 HARPS GTO M Dwarf Sample (Bonfils et al., 2013)
4 Cool Tiny Beats Campaign (CTB)
6 Literature planet hosts
= **112 HARPS M dwarfs with R'_{HK}**



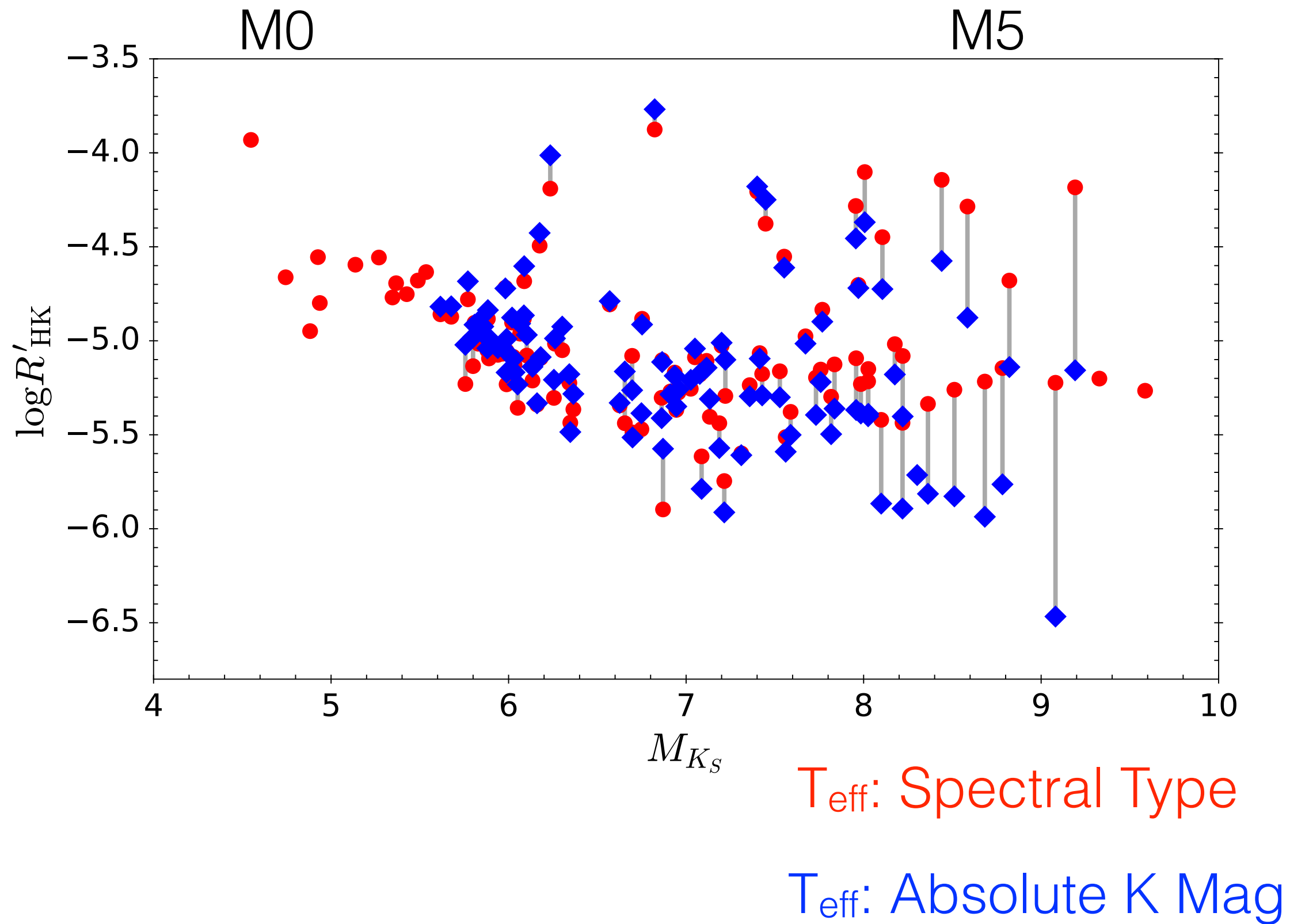
T_{eff} : Spectral Type

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4 Cool Tiny Beats Campaign (CTB)

6 Literature planet hosts

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Combine S_{MWO} datasets of FGK stars...

Instr./Survey	Nstars	
Mount Wilson	67	Baliunas et al. (1995)
HARPS FGK	266	Lovis et al. (2011)
CPS	2154	Wright et al. (2004); Isaacson & Fischer (2010)
Magellan Planet Search	492	Arriagada et al. (2011)
Southern Stars	1727	Henry et al. (1996); Gray et al. (2006)
Lowell	26	Hall et al. (2009)

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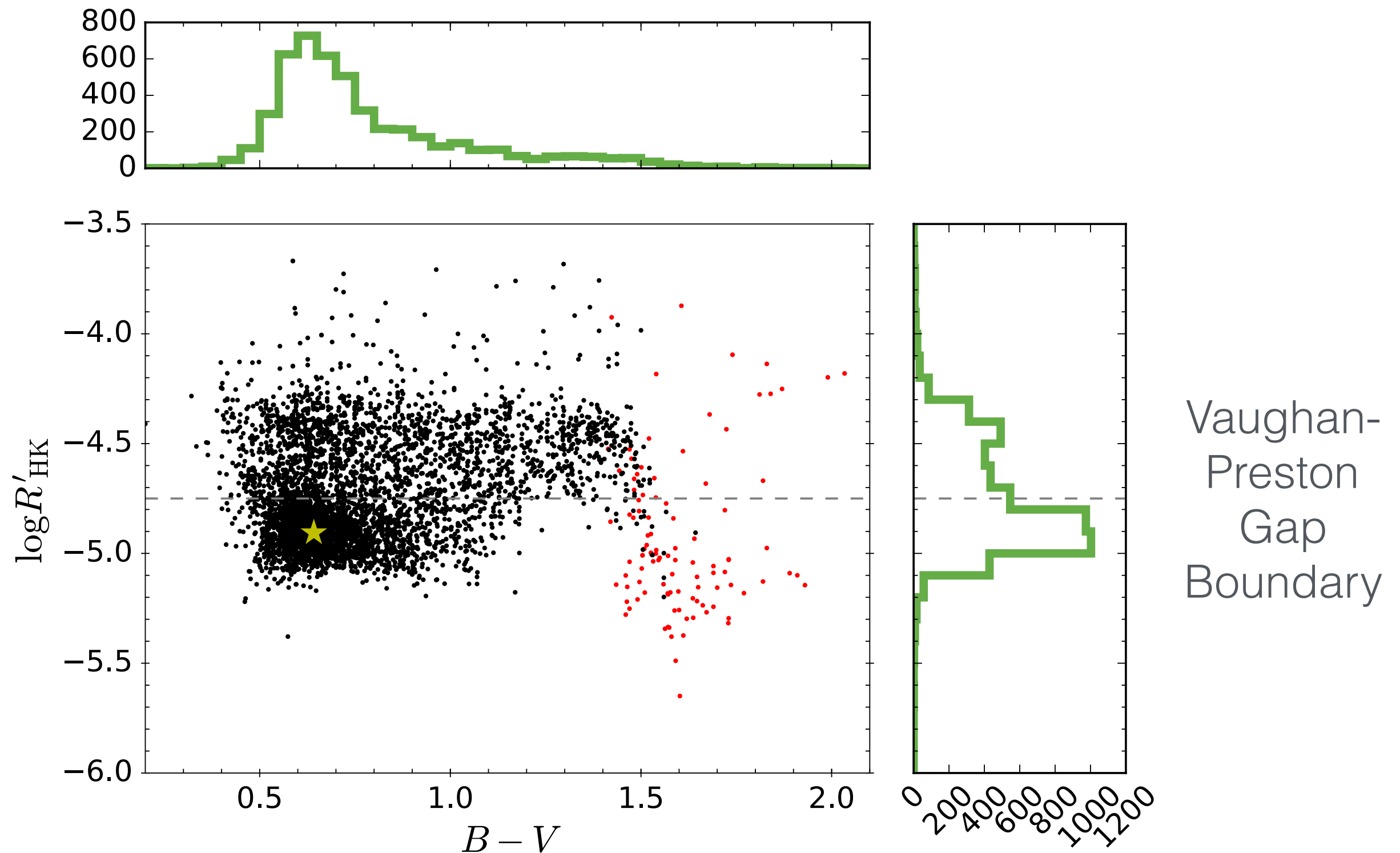
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+ 112 HARPS M dwarfs (Lovis et al., 2011)

= 4844 FGKM stars with S_{MWO} measurements

Goettingen Chromospheric Activity Database

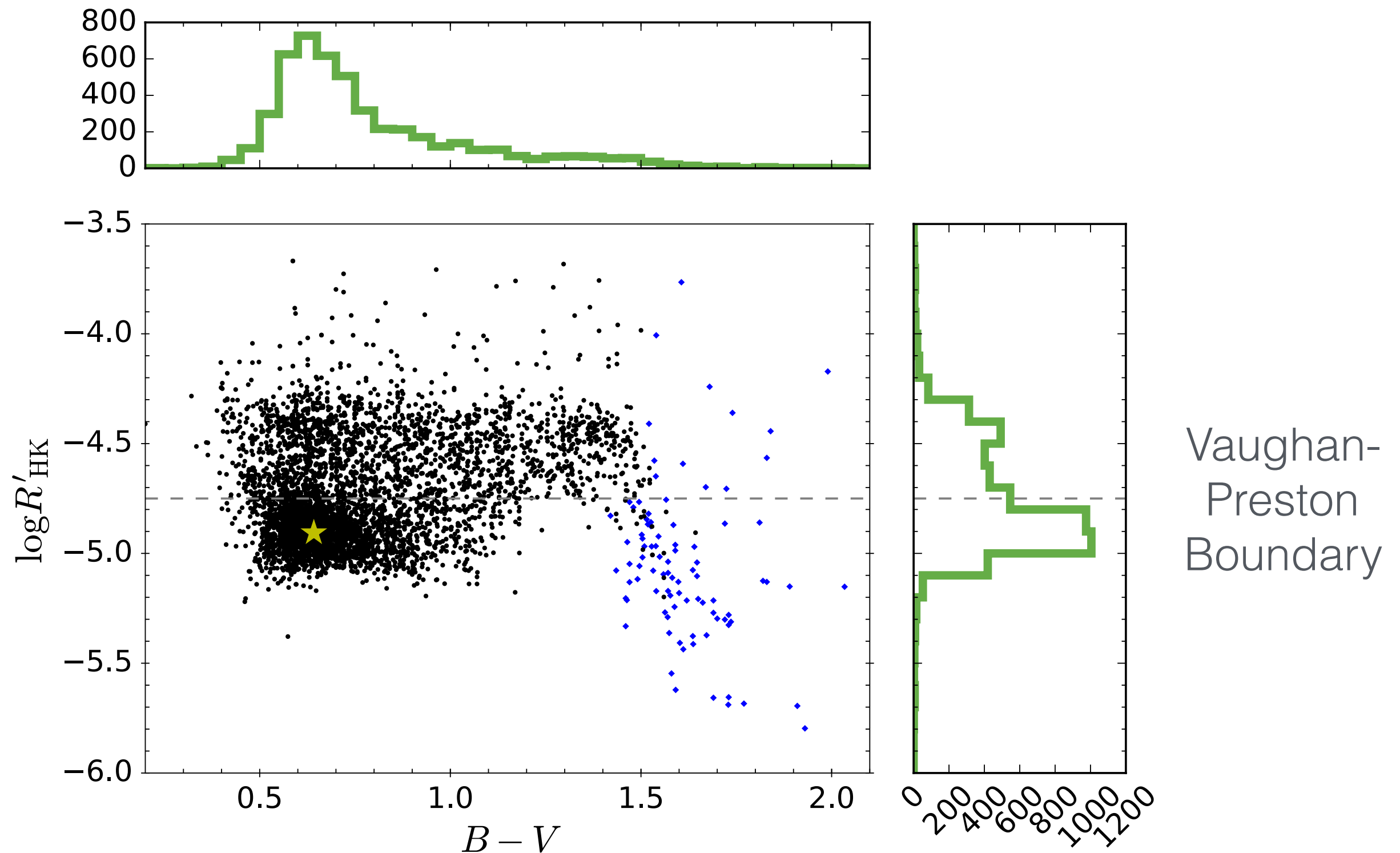


Boro Saikia et al., (in prep)

Conclusions

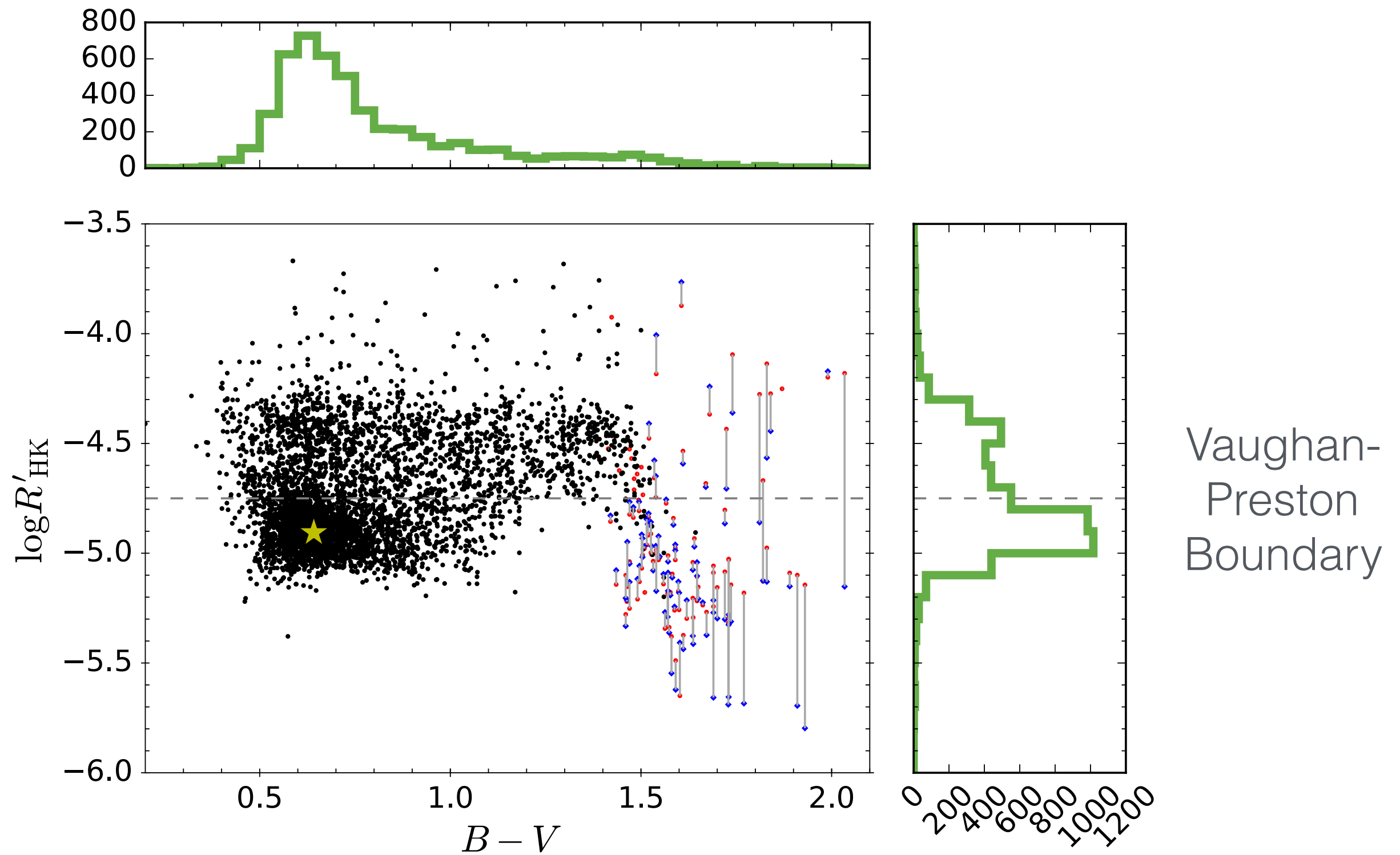
- Obtained R'_{HK} measurements for **112 M dwarfs**
- Extended R'_{HK} calibrations from **F to late M dwarfs** using PHOENIX models
- Göttingen Chromospheric Activity Database with R'_{HK} measurements of **4844 FGKM stars**

Goettingen Chromospheric Activity Database

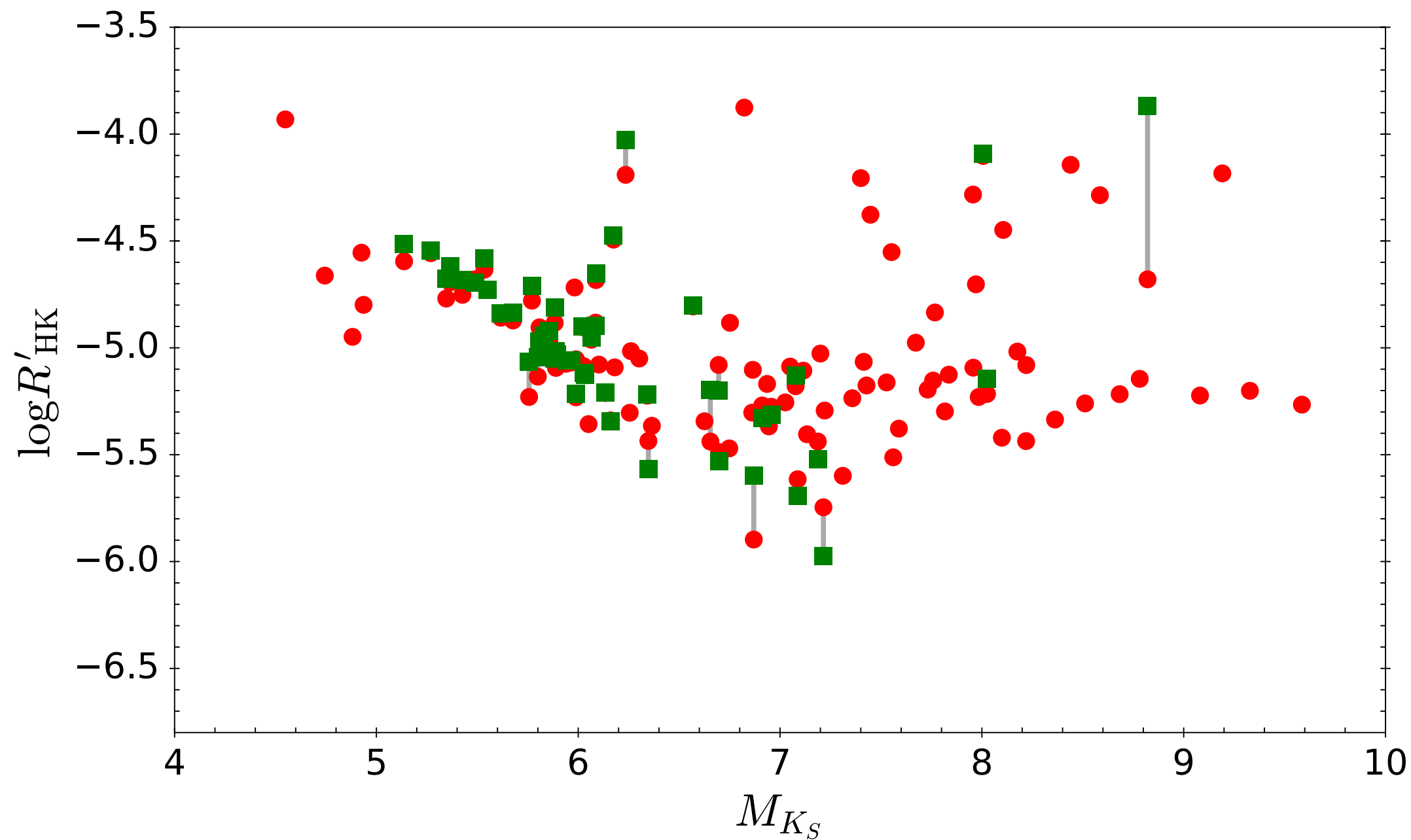


Boro Saikia et al., (in prep)

Goettingen Chromospheric Activity Database



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Teff: Spectral Type

Teff: Maldonado et al. (2015)