```
Python 3.7.6 (default, Jan 28 2020, 07:20:10)
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IPython 7.12.0 -- An enhanced Interactive Python.
In [1]: runfile('/Users/josephbarrow/Apogee By Programmer Dojo', wdir='/Users/josephbarrow')
/Users/josephbarrow/opt/anaconda3/bin/python
Using matplotlib backend: MacOSX

Class G: 12
Class K: 2147
Class M: 2160
Class A: 5246
Class F: 5248
Class B: 1124
Class O: 1124
Class C: 1123
Class D: 1123

Fe: 42212
Mg: 32146
Ca: 32146
Na: 32146
Ni: 32146

Kic: Stars 47207

Wd: Stars 5736

Mg_w: Stars 5258
Ca_w: Stars 5258
Na_w: Stars 5258
Ni_w: Stars 5258

SNR_Mg: Stars 20894
SNR_Ca: Stars 20894
SNR_Na: Stars 20894
SNR_Ni: Stars 12953

Mg_dc: Stars 5848
Ca_dc: Stars 5848
Na_dc: Stars 5848
Ni_dc: Stars 5848

Mg_p: Stars 5224
Ca_p: Stars 7925
Na_p: Stars 7925
Ni_p: Stars 7925

Mg_m: Stars 21268
Ca_m: Stars 21268
Na_m: Stars 21268
Ni_m: Stars 21268

Fields: 2'300:60'C'*600:60' *600:60'C' ..., 'moving_groups' 'ra'*'dec' 'ra'C'

Mg2ur: 22719
best_sequence: 525
subgiants: 0
dwarfs: 22194
red_giants: 2460

cu1_brn: 8361
best_sequence: 1007
subgiants: 0
dwarfs: 7354
red_giants: 2129

Na2u: 17614
best_sequence: 4476
turnoff: 2956
subgiants: 0
red_giants: 5258

Na2u_BHG: 2962
best_sequence: 1962
turnoff: 750
subgiants: 0
red_giants: 1500

Na2u_dwarf: 7347
best_sequence: 3347
turnoff: 84
subgiants: 0
red_giants: 3417

Na2u_sthown: 7719
best_sequence: 2719
subgiants: 0
dwarfs: 5000
red_giants: 2453

Ca2u: 2212
best_sequence: 1238
turnoff: 974
subgiants: 0
red_giants: 1238

Ca2u_BHG: 1962
best_sequence: 514
turnoff: 1448
subgiants: 0
red_giants: 1448

Ca2u2: 30211
best_sequence: 7984
turnoff: 22227
subgiants: 27
red_giants: 7957

ae1u2: 10870
best_sequence: 2888
turnoff: 7982
subgiants: 0
red_giants: 2888

ae1 1211
best_sequence: 53
turnoff: 1158
subgiants: 0
dwarfs: 1158

ae1_clust: 263
best_sequence: 75
turnoff: 188
subgiants: 0
red_giants: 113

cluster_ae1 5470
best_sequence: 2470
turnoff: 3000
subgiants: 0
red_giants: 2470

cluster_ae1 2345
best_sequence: 1174
turnoff: 1171
subgiants: 0
red_giants: 1174

cluster_ae1 967
best_sequence: 367
turnoff: 0
subgiants: 0
red_giants: 367

cluster_ae1 1171
best_sequence: 1171
turnoff: 0
subgiants: 0
red_giants: 1171

cluster_ae1 848
best_sequence: 1698
turnoff: 0
subgiants: 0
red_giants: 1698

cluster_ae1 1172
best_sequence: 1172
turnoff: 0
subgiants: 0
red_giants: 1172

cluster_ae1 1698
best_sequence: 1698
turnoff: 0
subgiants: 0
red_giants: 1698

cluster_ae1 1698
best_sequence: 529
turnoff: 1169
subgiants: 0
red_giants: 1169

Mg2ur2u2: 7431
best_sequence: 1017
turnoff: 148
subgiants: 0
red_giants: 6262

ae1 1198
best_sequence: 313
turnoff: 198
subgiants: 0
red_giants: 1198

Al_dir: 204
best_sequence: 20
turnoff: 0
subgiants: 0
red_giants: 224

Na_amber: 13512
best_sequence: 1353
turnoff: 1353
subgiants: 0
red_giants: 8224

Mg_dir: 1340
best_sequence: 353
turnoff: 0
subgiants: 0
red_giants: 353

Mg_amber: 1
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1

Ca_dir: 1
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1

Ca_amber: 1
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1

Ni_dir: 1
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1

Ni_amber: 1
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1

Na_dir: 1
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1

Na_amber: 1
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1

Mg2ur2u2_17u: 2962
best_sequence: 27
turnoff: 0
subgiants: 0
red_giants: 27

Ca2ur2u2_17u 10672
best_sequence: 138
turnoff: 0
subgiants: 0
red_giants: 138

Na2ur2u2_17u 2
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1

Ni2ur2u2_17u 10672
best_sequence: 138
turnoff: 0
subgiants: 0
red_giants: 138

Al2ur2u2_17u 2327
best_sequence: 1163
turnoff: 1163
subgiants: 0
red_giants: 2038

ae1u2_dwarf_17u
best_sequence: 38
turnoff: 38
subgiants: 0
red_giants: 0

subdwarf 1227
best_sequence: 1227
turnoff: 0
subgiants: 0
red_giants: 1212

moving_star 1212
best_sequence: 1212
turnoff: 124
subgiants: 0
red_giants: 1088

Teledwarfbands_17u 6853
best_sequence: 1
turnoff: 1
subgiants: 0
red_giants: 6853

Teledwarfbands_17u 8172
best_sequence: 1292
turnoff: 0
subgiants: 0
red_giants: 8180

Teledwarfbands_17u 1292
best_sequence: 1292
turnoff: 0
subgiants: 0
red_giants: 1292

weldwarf_17u 1280
best_sequence: 87
turnoff: 0
subgiants: 0
red_giants: 1193

ae1 3238
best_sequence: 2423
turnoff: 0
subgiants: 1214
red_giants: 1214

ae1u2_17u 3214
best_sequence: 1
turnoff: 0
subgiants: 0
red_giants: 1214

Program: Teledwarfbands_17u

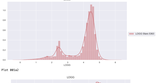
Teledwarfbands_17u: WHIGS
We propose to collect APOGEE spectra of bright, cool dwarf stars monitored with the K2 ecliptic survey, including stars found via the K2 light curves to host planet candidates and M dwarf stars.
The K2 ecliptic survey is a survey of the ecliptic plane with a cadence optimized for low-mass stars in the intermediate-term (months-years) regime.
(1) Identifying rotation periods of M dwarfs
(2) Identifying M dwarf binaries and multiples
(3) Looking for correlations between stellar architectures and host-star compositions.
(4) Identifying M dwarf stars with potential to the development of an analytic method for extracting stellar, orbital parameters of full-SNR M stars.

Fields: 2'300:60'C' *600:60'C' *600:60'C' *600:60'C' *600:60'C' *600:60'C'
*600:60'C' *600:60'C' *600:60'C' *600:60'C' *600:60'C' *600:60'C' *600:60'C'
*600:60'C' *600:60'C' *600:60'C' *600:60'C' *600:60'C' *600:60'C' *600:60'C'
-'175:21'C' -'174:21'C' -'176:21'C' -'251:60'C' -'247:60'C' -'243:60'C'

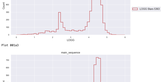
Plot 001

best_sequence: 3123
turnoff: 1123
subgiants: 001
red_giants: 2000

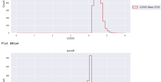
Plot 001a



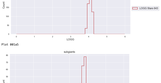

Plot 001a2



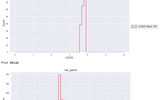

Plot 001u3



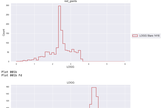

Plot 001u4




Plot 001u5

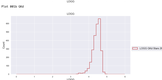



Plot 001u6

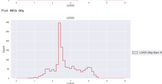



Plot 001u

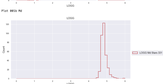
Plot 001u F2



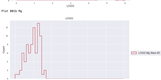

Plot 001u U6V




Plot 001u U6g




Plot 001u M4

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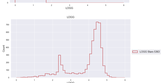
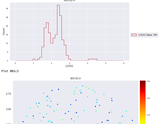


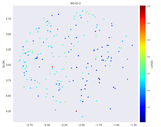

Plot 001u

Plot 001i

Plot 001u2

Plot 001u3



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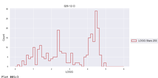
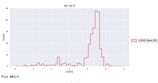
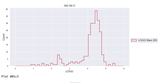


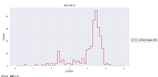
Plot BBLD



Plot BBLD



Plot BBLD



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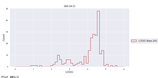

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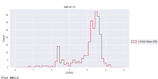

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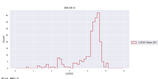

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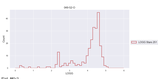

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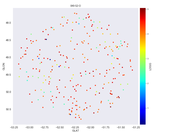
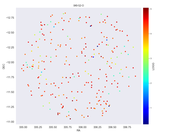
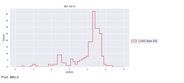
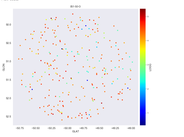
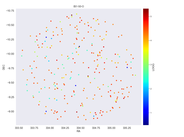


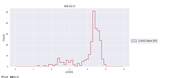




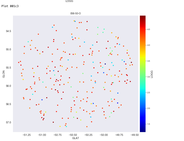
Plot BRLO

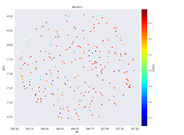


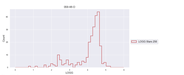




Plot BRLO







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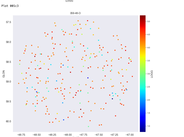

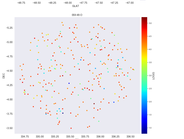

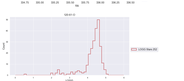

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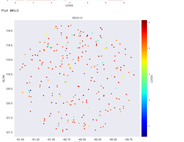

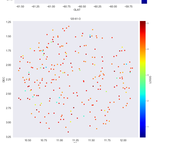

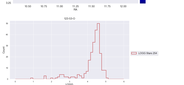

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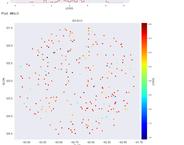

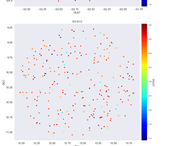

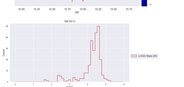

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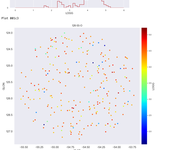

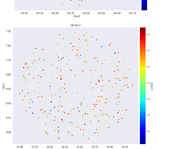

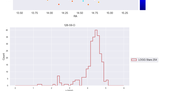

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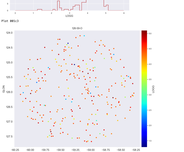

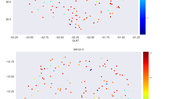

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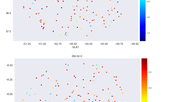

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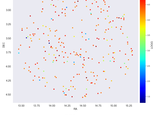

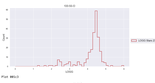

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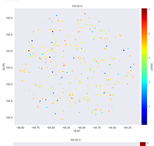

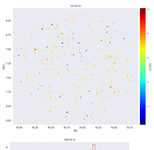

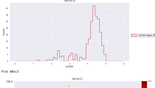

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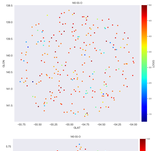

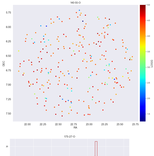

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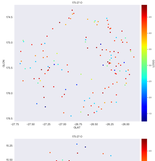

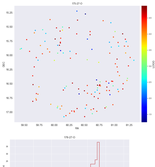

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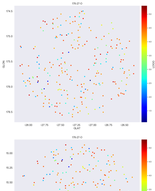

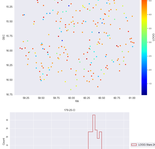

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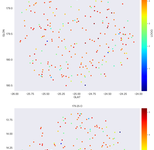

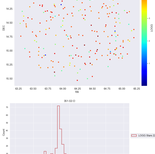

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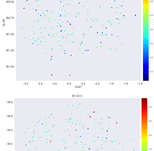

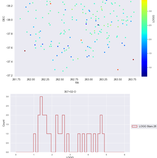

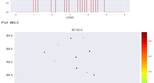

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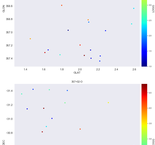

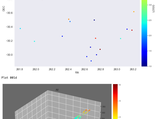

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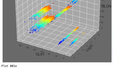

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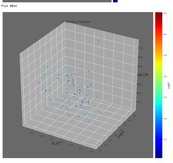
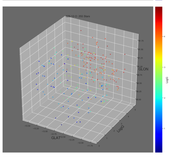
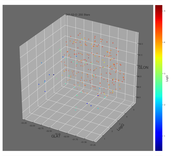
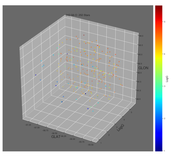
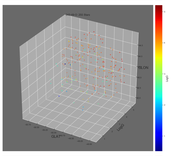
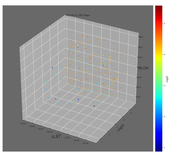


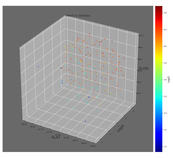


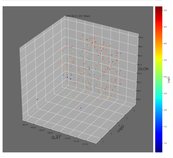


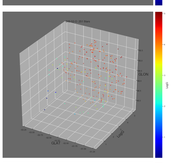


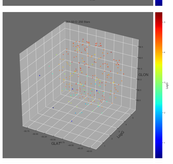


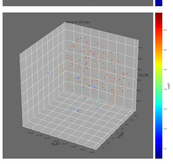


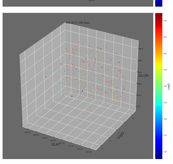


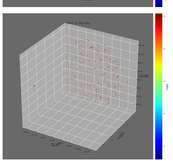


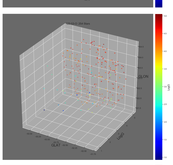


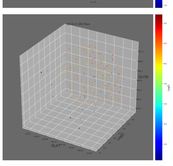


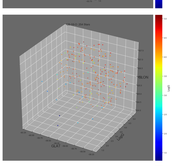


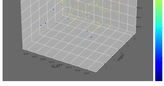


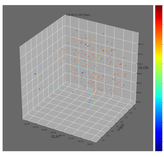


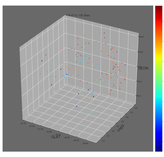


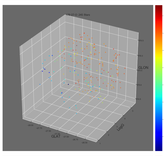


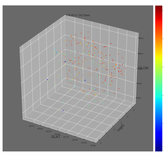


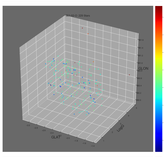


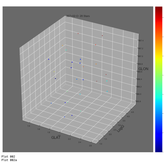




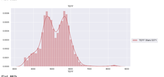








Plot 001
Plot 002



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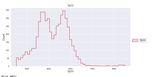

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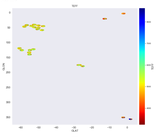

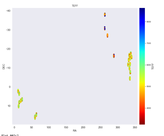

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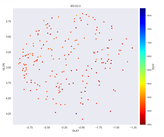

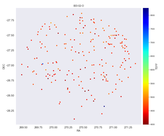

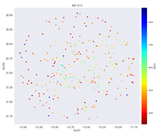

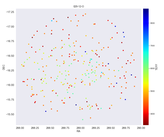

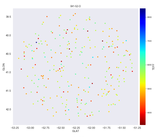

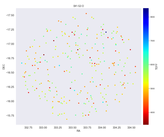

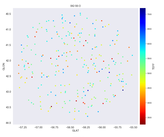

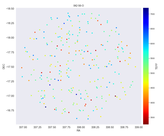

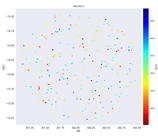
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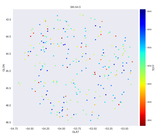
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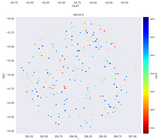
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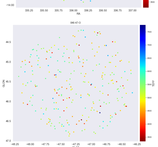
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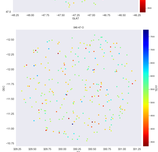
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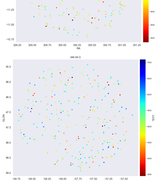
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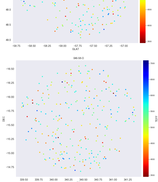
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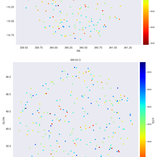
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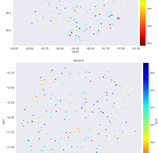
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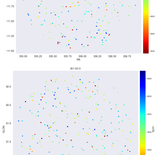
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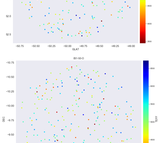
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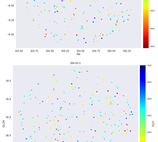
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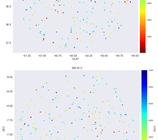
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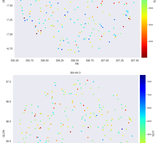
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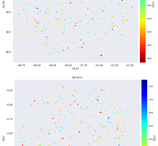
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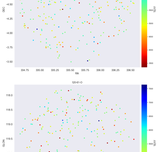
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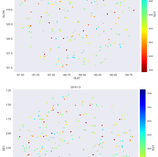
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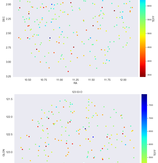
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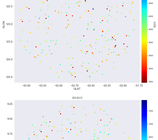
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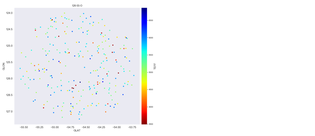
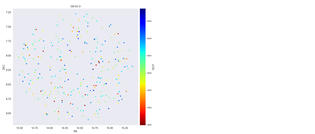
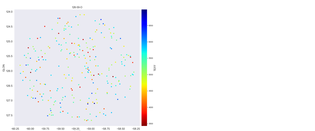
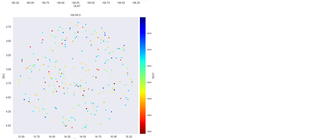
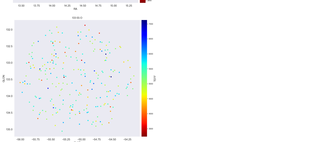
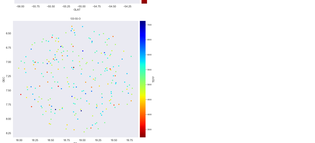


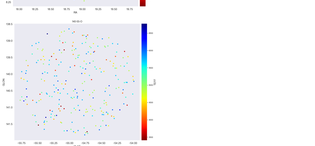


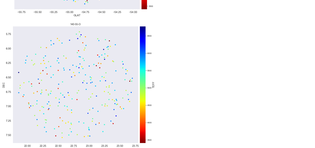


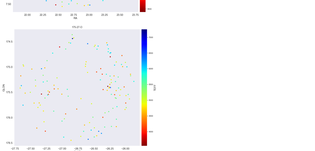


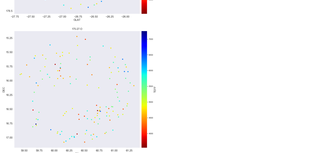


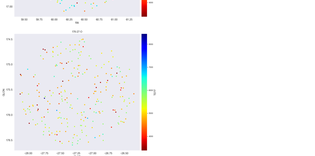


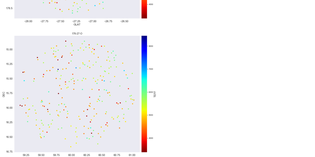


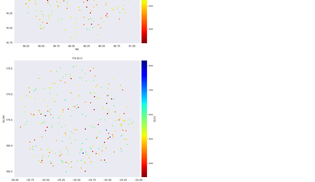


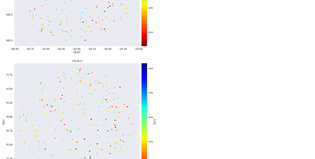


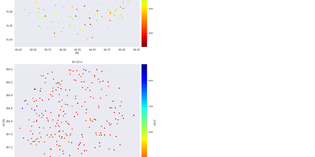


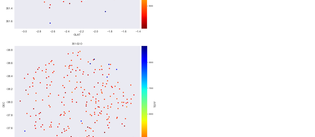


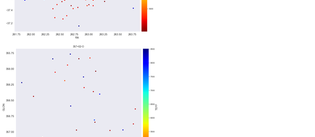


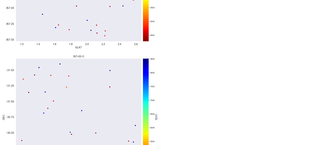


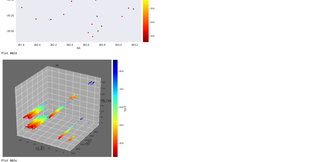






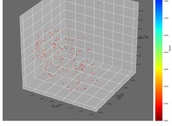
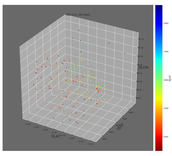
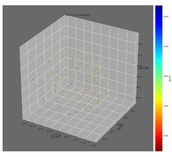
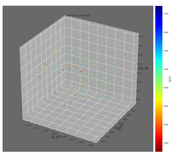
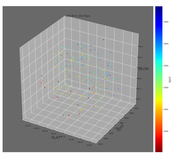
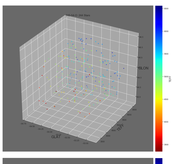
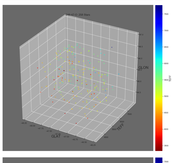
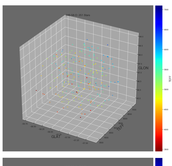
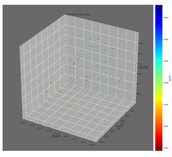
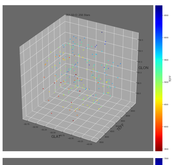
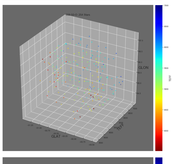
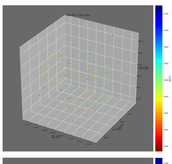
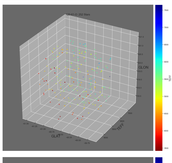
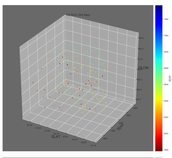
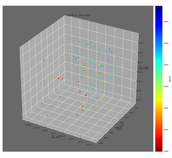
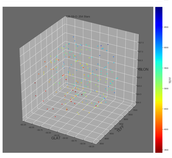
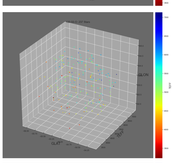


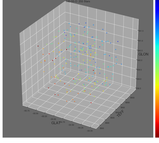




Fun Bit

Fun Bits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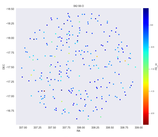
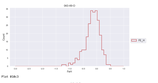
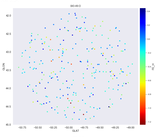
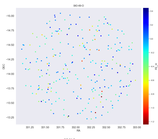
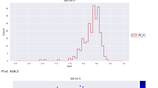




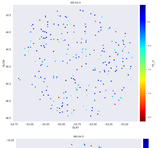
Plot #18-3

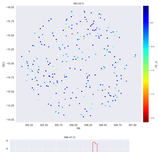




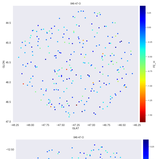


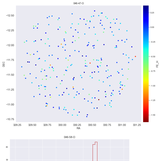
Plot #18-3



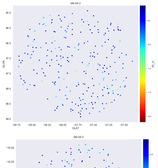


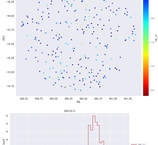
Plot #18-3



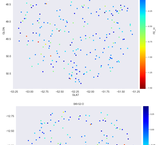


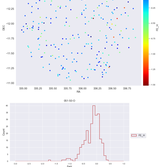
Plot #18-3

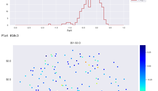




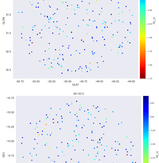
Plot #18-3

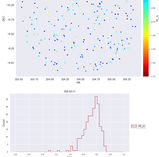




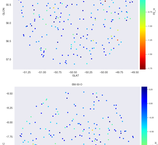


Plot #18-3



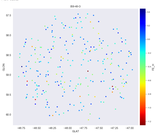


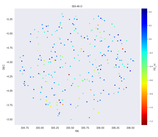
Plot #18-3

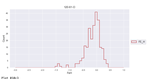


Plot #18-3

ML/K
Time
Fun KMO


Fun KMO

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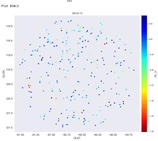
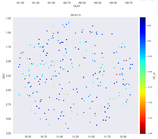
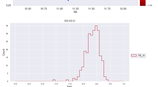

Fun KMO

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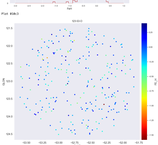
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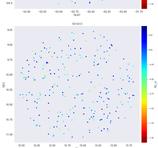

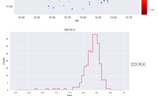
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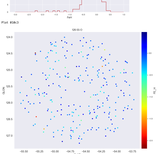
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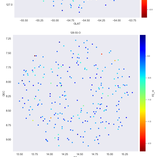

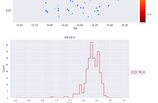
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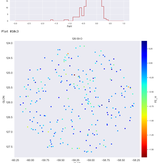
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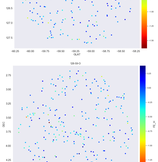

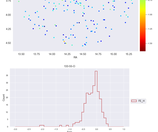
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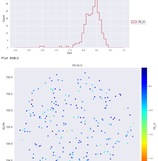
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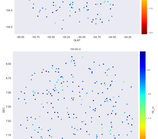

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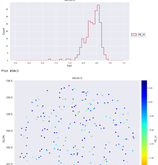
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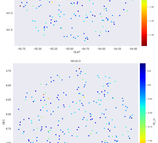

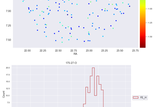
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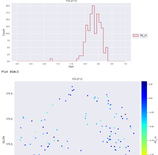
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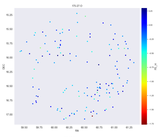
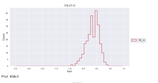
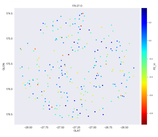
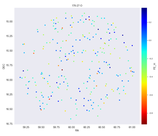
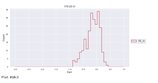




Plot 89&3







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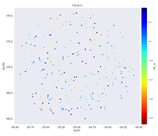
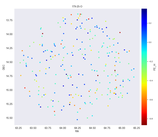
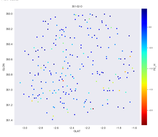
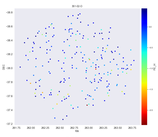
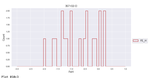




Plot 89&3







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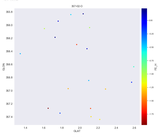

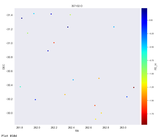

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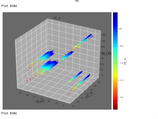

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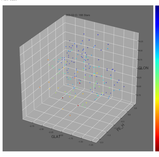

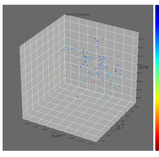

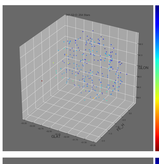

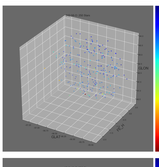

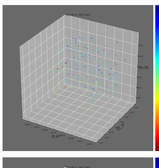

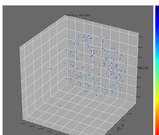

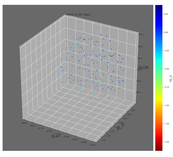

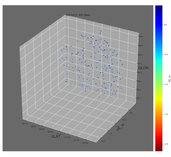

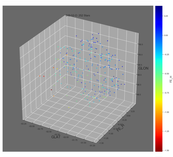

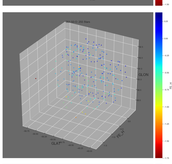

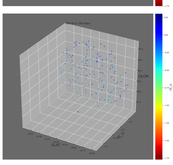

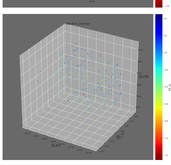

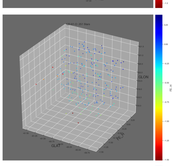

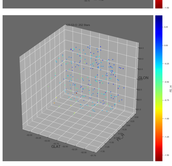

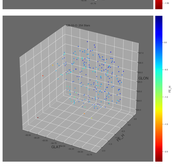

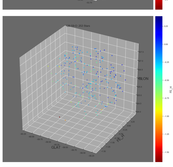

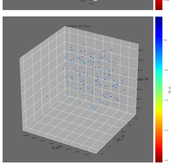

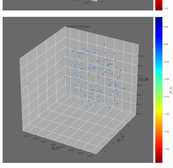

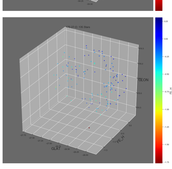

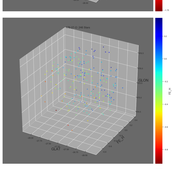

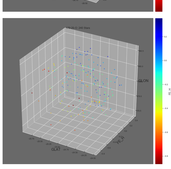

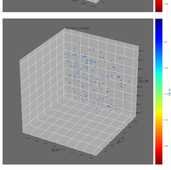

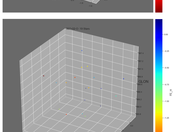

0.37
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0.27
0.25

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
Mn_FZ, Mean 5482

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
Mn_FN, Mean 5482

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
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Hair Cuticle
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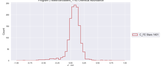
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Angle (deg)
OA_FZ, Mean 5482

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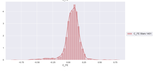
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
OA_FN, Mean 5482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Count
Angle (deg)
OL_FZ, Mean 5482

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Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
OL_FN, Mean 5482

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Program: CuticleGeometry_v7Q, Chemical: Mandelonic
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Angle (deg)
OL_FZ, Mean 5482

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
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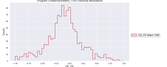
Angle (deg)
OA_FZ, Mean 5482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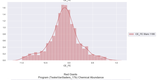
OL_FZ, Mean 5482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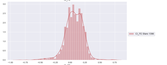
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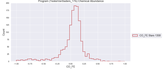
OL_FN, Mean 5482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Angle (deg)
N_FZ, Mean 5482

Hair Cuticle
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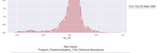
Angle (deg)
N_FN, Mean 5482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Count
Angle (deg)
MN_FZ, Mean 5482

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Count
Angle (deg)
MN_FN, Mean 5482

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Angle (deg)
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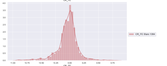
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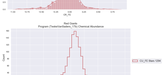
Angle (deg)
N_FN, Mean 5482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Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
MN_FZ, Mean 5357

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
MN_FN, Mean 5357

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
Mn_FZ, Mean 5482

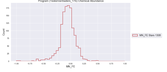
Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
Mn_FN, Mean 5482

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
Cl_FZ, Mean 5314

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
Cl_FN, Mean 5314

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
FL_FZ, Mean 5200

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
FL_FN, Mean 5200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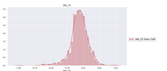
Count
Angle (deg)
Cl_FZ, Mean 5482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Count
Angle (deg)
Cl_FN, Mean 5482

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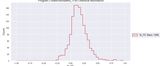
Cl_FZ, Mean 5314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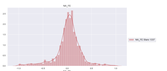
Count
Angle (deg)
Cl_FN, Mean 5314

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
FL_FZ, Mean 5200

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
FL_FN, Mean 5200

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
N_FZ, Mean 5482

Hair Cuticle
Program: CuticleGeometry_v7Q, Chemical: Mandelonic
Count
Angle (deg)
N_FN, Mean 5482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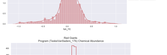
Tc_FZ, Mean 5200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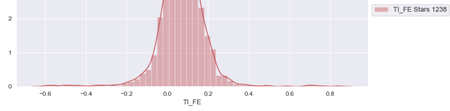

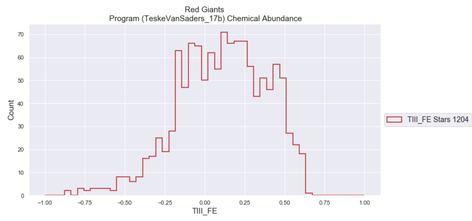

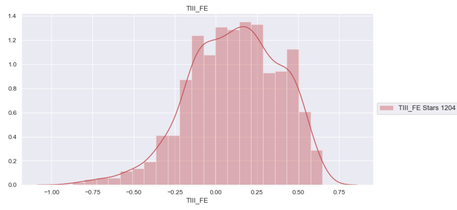

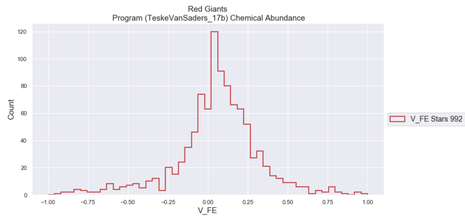

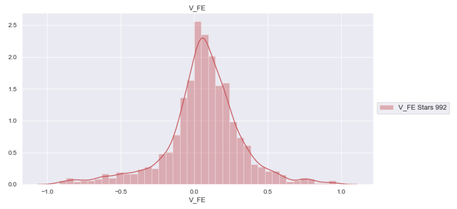

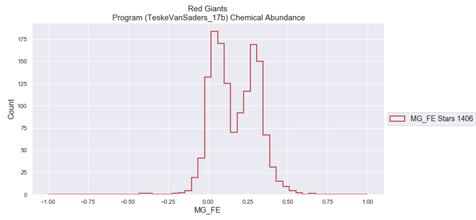

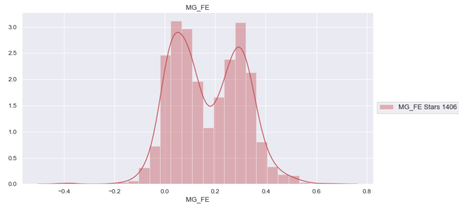

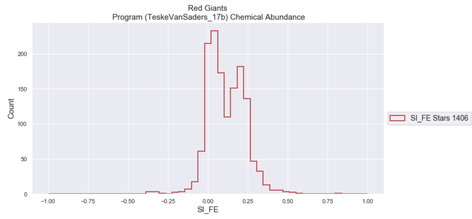

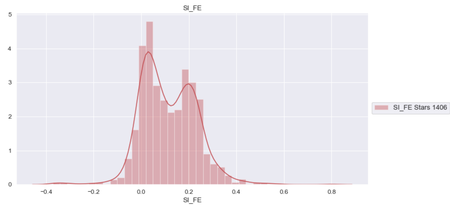


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Class B: 0
Class A: 68
Class F: 424
Class G: 1490
Class K: 2317
Class M: 743
Class L: 0
Class T: 0

Fd: 709
GKd: 2602
GKg: 1613
Md: 331
Mg: 80

All: Stars 5376

BA: Stars 41

Fd_a: Stars 325
Fd_b: Stars 202
Fd_c: Stars 124
Fd_d: Stars 58

GKd_a: Stars 1295
GKd_b: Stars 659
GKd_c: Stars 445
GKd_d: Stars 203

GKg_a: Stars 837
GKg_b: Stars 409
GKg_c: Stars 257
GKg_d: Stars 110

Md_a: Stars 176
Md_b: Stars 69
Md_c: Stars 67
Md_d: Stars 19

Mg_a: Stars 41
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Mg_c: Stars 8
Mg_d: Stars 5

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Program: TeskeVanSaders_17b


TeskeVanSaders_17b: 6053
We propose to collect APOGEE spectra of bright, cool dwarf stars monitored with the K2 ecliptic survey,
including stars found via the K2 light curves to host planet candidates and M dwarf stars.
These APOGEE data will be used to measure stellar parameters and chemical abundances for low-mass stars
in the K2 campaign fields. The science goals are
(1) estimating rotation-based ages,
(2) deriving the age-metallicity relation, and
(3) looking for correlations between exoplanet architectures and host-star compositions.
In particular, M dwarf spectra are of high value in the development of an analysis method for extracting
reliable, detailed abundances of Teff<4000 K stars.

Done!
```

In [2]: