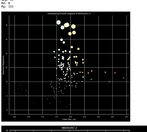
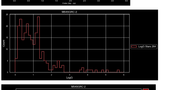
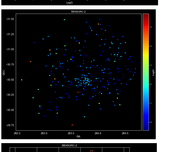
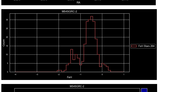
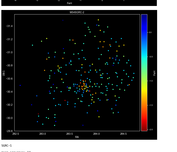
```
Python 3.7.8 (default, Jun 24 2020, 07:20:10)
Type "help", "copyright", "credits" or "license" for more information.
IPython 7.2.0 -- An enhanced Interactive Python.
In [1]: runfile('/Users/jonathanscholz/Engage By Programmer MF 3 subset 3.py', wdir='/Users/jonathanscholz')
/Users/jonathanscholz/anaconda3/lib/python3.7/site-packages
Loading data...
Class 0: 10
Class 1: 10
Class 2: 10187
Class 3: 52168
Class 4: 52168
Class 5: 172648
Class 6: 172648
Class 7: 3878
Class 8: 3878

Fit KCCA2
Mapping KCCA2
Fit KCCA3
Mapping KCCA3
Fit KCCA4
Mapping KCCA4

KCC1 Stars 4372987

Mc Stars 5730

Mg_g1 Stars 5230
Mg_g2 Stars 10460
Mg_g3 Stars 20920
Mg_g4 Stars 41840

SKK_g1 Stars 20904
SKK_g2 Stars 41808
SKK_g3 Stars 83616
SKK_g4 Stars 167232

Ms_g1 Stars 50616
Ms_g2 Stars 101232
Ms_g3 Stars 202465
Ms_g4 Stars 404930

Mq_g1 Stars 5230
Mq_g2 Stars 7924
Mq_g3 Stars 12010
Mq_g4 Stars 18203

Mq_g1 Stars 21508
Mq_g2 Stars 32594
Mq_g3 Stars 49397
Mq_g4 Stars 74863

Mp1 5253
Mp2 10506

Cluster_g1: 9232
Cluster_g2: 13987
Cluster_g3: 20
Cluster_g4: 30
Cluster_g5: 45
Cluster_g6: 68
Cluster_g7: 103

Cluster_pc: 156

Mag Cands: 7424

Mp1 5253

##########################################################################
##########################################################################

main_sequence: 53
turnoff: 1
subgiants: 0
red_giants: 114

Plotting [PRIMARY, SUBC-1? *SUBC-2? *SUBC-4?]

##########################################################################
##########################################################################

PRIMARY-2

main_sequence: 5
turnoff: 1
subgiants: 1
red_giants: 14
red_giants - red_clump: 247

Fit 0
Map: 0
Mc: 0
Mq: 0
Mp: 0
```





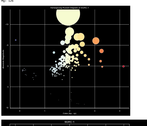


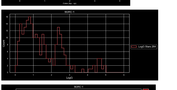


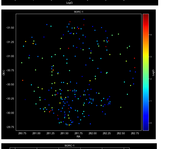


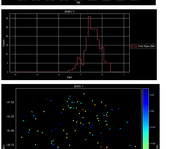
SUBC-1

```
main_sequence: 14
turnoff: 1
subgiants: 0
red_giants: 248
red_giants - red_clump: 339

Fit 0
Map: 0
Mc: 0
Mq: 0
Mp: 0
```



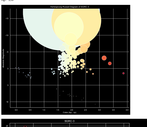


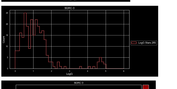


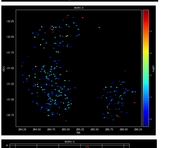


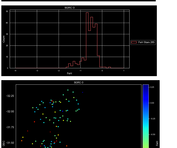
SUBC-2

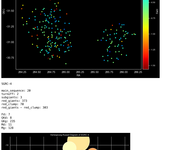
```
main_sequence: 14
turnoff: 1
subgiants: 0
red_giants: 248
red_giants - red_clump: 265

Fit 0
Map: 0
Mc: 0
Mq: 0
Mp: 0
```





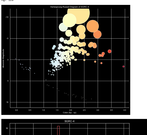


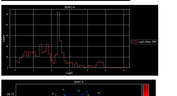


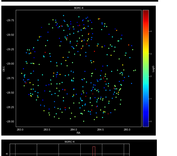


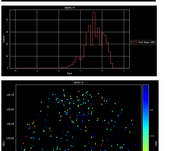
SUBC-4

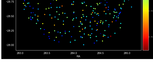
```
main_sequence: 20
turnoff: 1
subgiants: 0
red_giants: 321
Fit 0
red_giants - red_clump: 383

Fit 0
Map: 0
Mc: 0
Mq: 0
Mp: 0
```









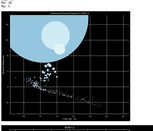


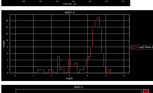
tgr_clim1.JPG

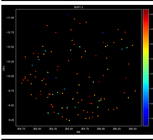
```
##############################################################
##############################################################
main_sequence: 25
nclusters: 4
subgenre: 1
rnd_clumps: 12
##############################################################
##############################################################
Fields: ["SgRT_J"]
##############################################################
##############################################################
```

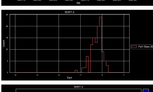
SgRT_J

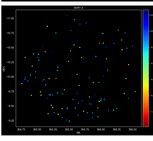
```
main_sequence: 25
nclusters: 4
subgenre: 1
rnd_clumps: 12
rnd_clumps: 0
rnd_clumps: 0 rnd_clumps: 171

Cl: 0
Ages: 10
Ages: 10
Ages: 10
Ma: 10
Ma: 10
```









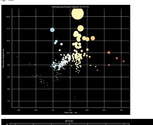


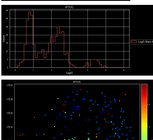
cluster_gr: 5458

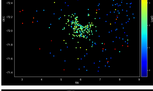
```
##############################################################
##############################################################
main_sequence: 25
nclusters: 4
subgenre: 1
rnd_clumps: 12
##############################################################
##############################################################
Fields: ["FTG2", "FCC_B", "FCC", "FCCMAJ1", "FCC1", "NGC811", "NGC90", "NGC91", "NGC93",
  "Omegacen", "Tap_Farm"]
##############################################################
##############################################################
```

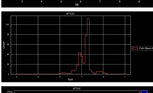
FTG2

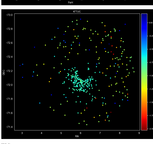
```
main_sequence: 22
nclusters: 4
subgenre: 1
rnd_clumps: 12
rnd_clumps: 40
rnd_clumps: 0 rnd_clumps: 346

Cl: 0
Ages: 10
Ages: 10
Ma: 10
Ma: 10
```





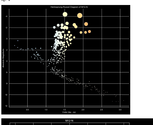


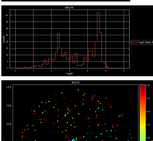


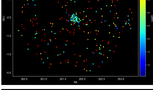


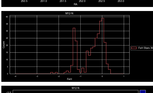
NGC4

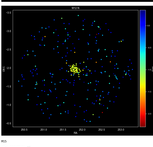
```
main_sequence: 110
nclusters: 4
subgenre: 11
rnd_clumps: 12
rnd_clumps: 20
rnd_clumps: 0 rnd_clumps: 176

Cl: 0
Ages: 10
Ages: 10
Ma: 10
Ma: 10
```





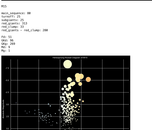


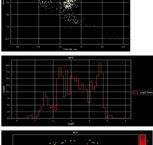


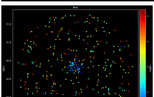


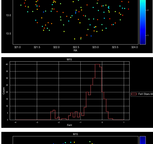
NGC

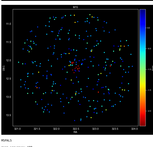
```
main_sequence: 60
nclusters: 4
subgenre: 11
rnd_clumps: 12
rnd_clumps: 10 rnd_clumps: 200

Cl: 0
Ages: 10
Ages: 10
Ma: 10
Ma: 10
```









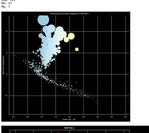
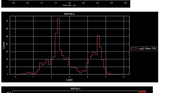
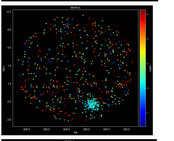
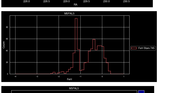
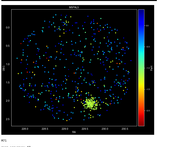


RCMJ.1

```
main_sequence: 100
nclusters: 4
subgenre: 11
rnd_clumps: 12
rnd_clumps: 20
```

red_gamma = red_flux/amp: 404

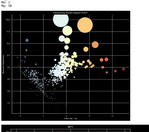
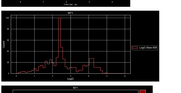
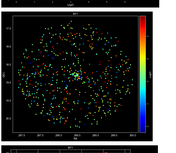
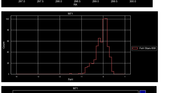
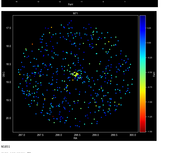
TYC 1891
Mag: 10.0
Mag: 10.0
Mag: 10.0
Mag: 10.0

BD+

main_sequence: 55
turnoff: 21
subgiants: 0
red_giants: 118
red_gamma: 118
red_gamma = red_flux/amp: 395

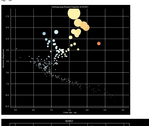
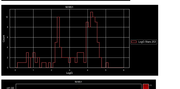
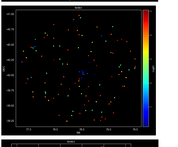
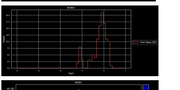
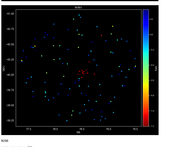
TYC 1135
Mag: 10.0
Mag: 10.0
Mag: 10.0
Mag: 10.0

BD+01

main_sequence: 30
turnoff: 21
subgiants: 0
red_giants: 102
red_gamma: 102
red_gamma = red_flux/amp: 582

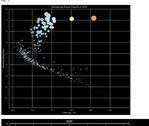
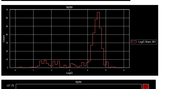
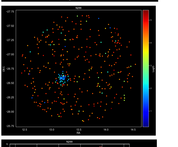
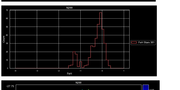
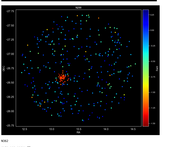
TYC 18
Mag: 10.0
Mag: 10.0
Mag: 10.0
Mag: 10.0

BD+08

main_sequence: 171
turnoff: 0
subgiants: 0
red_giants: 0
red_gamma: 0
red_gamma = red_flux/amp: 72

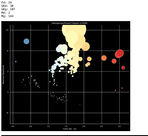
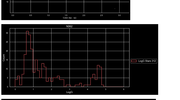
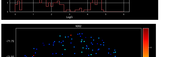
TYC 15
Mag: 10.0
Mag: 10.0
Mag: 10.0
Mag: 10.0

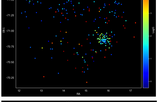






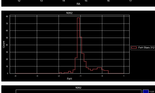
BD+1

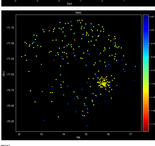
main_sequence: 36
turnoff: 0
subgiants: 0
red_giants: 0
red_gamma: 0
red_gamma = red_flux/amp: 263

TYC 20
Mag: 10.0
Mag: 10.0
Mag: 10.0
Mag: 10.0



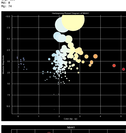


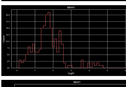


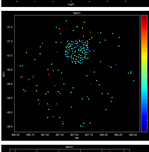
NGC6611

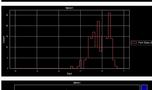
main_sequence: 0
turboFIT: 1
subgiants: 1
red_giants: 1
red_clump: 1
red_giants + red_clump: 253

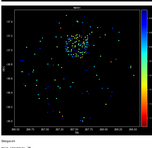
Cry: 0
Mgy: 0
Mgy: 24
Mr: 0
Mu: 0







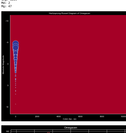


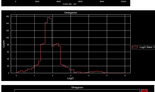


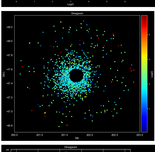
Omega47

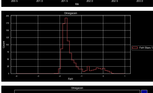
main_sequence: 28
turboFIT: 1
subgiants: 1
red_giants: 1
red_clump: 90
red_giants + red_clump: 1266

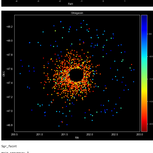
Cry: 0
Mgy: 0
Mgy: 1249
Mr: 0
Mu: 0







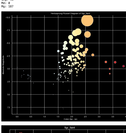


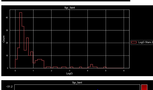


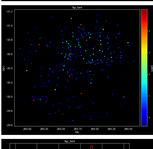
Tyc_7xxx

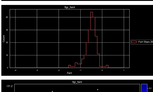
main_sequence: 5
turboFIT: 1
subgiants: 1
red_giants: 1
red_clump: 253
red_giants + red_clump: 253

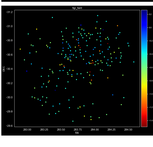
Cry: 0
Mgy: 0
Mgy: 0
Mr: 0
Mu: 0











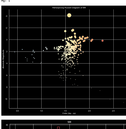
cluster_gt1: 2501

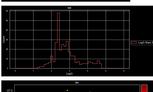
```
==========================================================================
==========================================================================

main_sequence: 675
turboFIT: 1001
subgiants: 1
red_giants: 253

Flatdec: ['Mr', 'Mmgr', 'MCYU', 'MJUCL', 'MJUNNN', 'MJUNN']

==========================================================================
==========================================================================
```

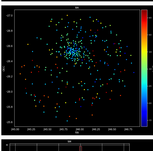
Mr

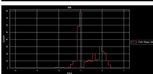
main_sequence: 75
turboFIT: 1
subgiants: 1
red_giants: 253
red_clump: 1
red_giants + red_clump: 253

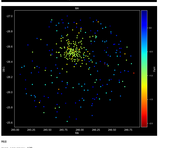
Cry: 0
Mgy: 0
Mgy: 254
Mr: 0
Mu: 0







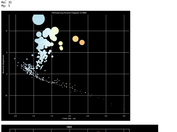


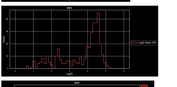


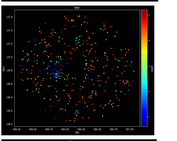
0N8

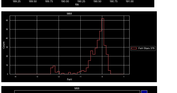
main_sequence: 179
turbulent: 0
subgiants: 36
giants: 0
red_giants: 0
red_clump: 121

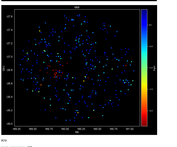
Dec: 0
Date: 1N8
Mag: 8.0
Mu: 0







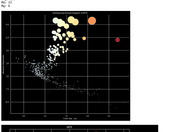


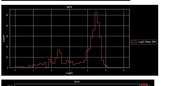


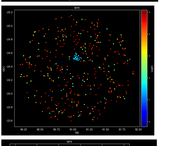
0C5

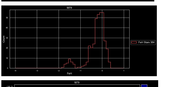
main_sequence: 185
turbulent: 0
subgiants: 42
giants: 0
red_giants: 0
red_clump: 106

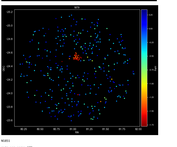
Dec: 0N
Date: 1C5
Mag: 8.0
Mu: 0







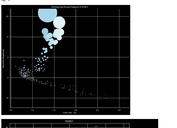


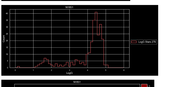


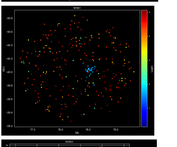
0C8S1

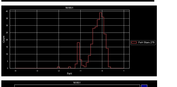
main_sequence: 172
turbulent: 0
subgiants: 5
giants: 0
red_giants: 0
red_clump: 47

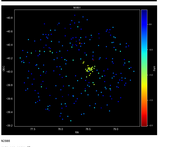
Dec: 0C
Date: 1C8
Mag: 9.0
Mu: 0
Mu: 0







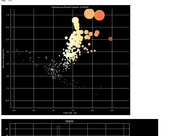


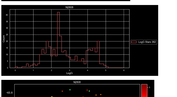


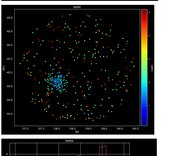
0C9N8

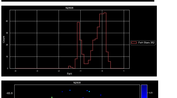
main_sequence: 65
turbulent: 0
subgiants: 5
giants: 0
red_giants: 0
red_clump: 212

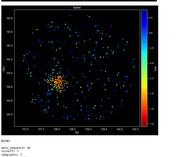
Dec: 0C
Date: 1C9
Mag: 9.0
Mu: 0







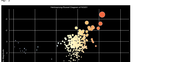


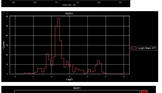


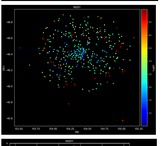
0C9N1

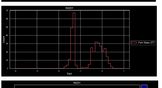
main_sequence: 92
turbulent: 1
subgiants: 0
giants: 0
red_giants: 0
red_clump: 145

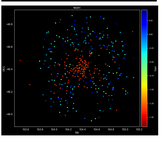
Dec: 0
Date: 1C9
Mag: 9.0
Mu: 0
Mu: 0



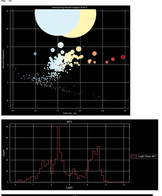


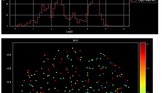


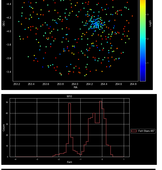




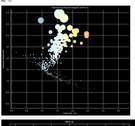
```
charter_gc1: 867
##########################################################################
##########################################################################

main_sequence: 276
turnoff: 82
subgiants: 52
red_giants: 457

Fields: ['MGA-C']

##########################################################################
##########################################################################

MGA

main_sequence: 117
turnoff: 31
subgiants: 11
red_giants: 111
red_clump: 12
Fits_cmd: 0.04_rlim: 240

Fe: -0
Age: 12
Dmp: 0.02
Mp: 0
Rp: 0
```

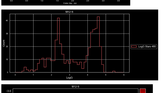


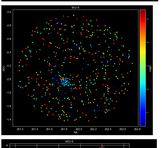


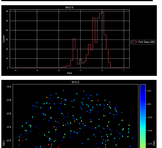


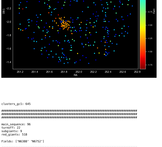
```
MGA-S

main_sequence: 159
turnoff: 51
subgiants: 31
red_giants: 346
red_clump: 36
Fits_cmd: 0.04_rlim: 230

Fe: -0
Age: 10.8
Dmp: 0.04
Mp: 0
Rp: 0
```



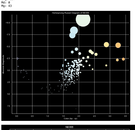


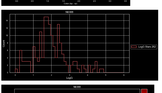


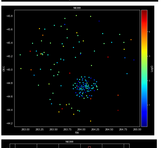


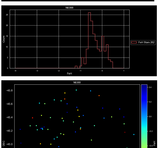


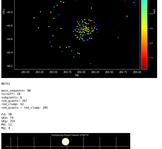
```
charters_gc1: 805
##########################################################################
##########################################################################

main_sequence: 96
turnoff: 6
subgiants: 4
red_giants: 18

Fields: ['MGAW', 'NGTU']

##########################################################################
##########################################################################

NGTU

main_sequence: 0
turnoff: 1
subgiants: 1
red_giants: 11
red_clump: 1
Fits_cmd: 0.04_rlim: 235

Fe: -0
Age: 10
Dmp: 0.04
Mp: 0
Rp: 0
```



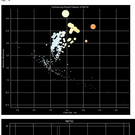


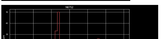


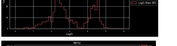


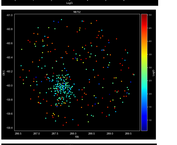


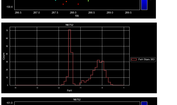
```
MGTU

main_sequence: 98
turnoff: 5
subgiants: 4
red_giants: 347
red_clump: 35
red_giants: red_rlim: 395

Fe: -0
Age: 12
Dmp: 0.05
Mp: 0
Rp: 0
```

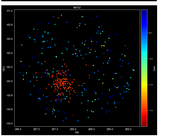






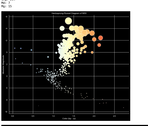


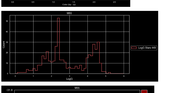


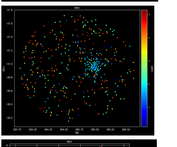


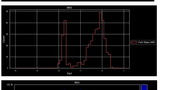
clusters_gc3: 448

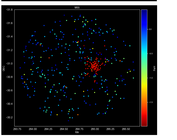
```
==================================================
==================================================
main_sequence: 100
backgrd: 48
subgrd: 0
red_quartz: 248

Flatlas. ("MOC1")
==================================================
==================================================
MAG

main_sequence: 100
backgrd: 48
subgrd: 0
red_quartz: 248
red_quartz. = red_cfluma: 237

Dir. CC
Dec: 189
Mag: 189
Mag. 0
Mu. 0
```





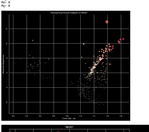


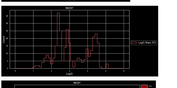


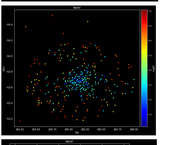


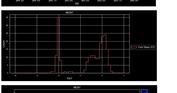
clusters_gc3: 372

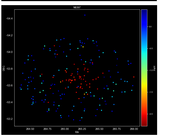
```
==================================================
==================================================
main_sequence: 72
backgrd: 48
subgrd: 0
red_quartz: 248

Flatlas. ("MAG1")
==================================================
==================================================
MAG1

main_sequence: 72
backgrd: 48
subgrd: 0
red_quartz: 248
red_quartz. = red_cfluma: 380

Dir. CC
Dec: 189
Mag: 189
Mag. 0
Mu. 0
```





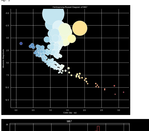


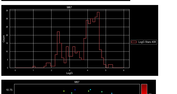


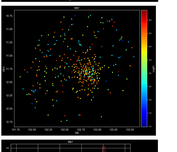


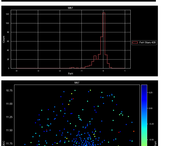
cluster_gc: 5298

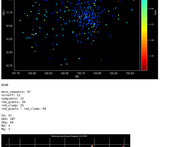
```
==================================================
==================================================
main_sequence: 329
backgrd: 148
subgrd: 0
red_quartz: 761

Flatlas. ("MOC" "MIDR" "MIDR" "MIDR1-5")
==================================================
==================================================
MAG

main_sequence: 158
backgrd: 48
subgrd: 0
red_quartz: 248
red_quartz. = red_cfluma: 144

Dir. CC
Dec: 189
Mag: 189
Mag. 0
Mu. 0
```





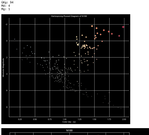


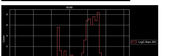


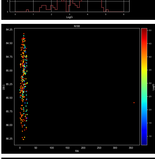


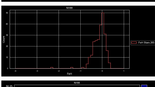
MIDR

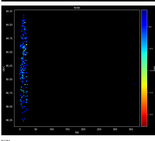
```
main_sequence: 97
backgrd: 48
subgrd: 0
red_quartz: 248
red_quartz. = red_cfluma: 69

Dir. CC
Dec: 189
Mag: 189
Mag. 0
Mu. 0
```

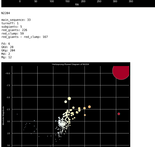






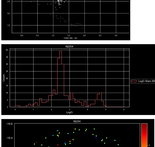


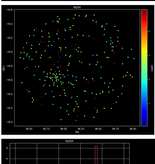


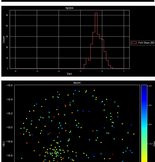


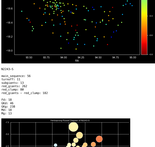
NC004

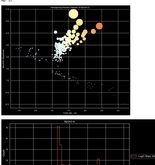
```
main_sequence: 33
turnoff: 19
subgiants: 1
red_giants: 14
red_clump: 30
red_giants - red_clump: 167

Fe: 0
Mg: 0
Ca: 0
Na: 0
```





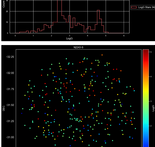


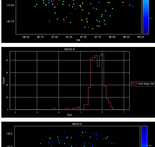


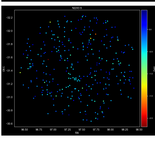


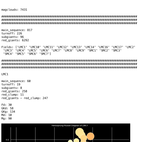
NC010-1

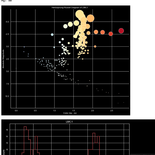
```
main_sequence: 56
turnoff: 19
subgiants: 1
red_giants: 36
red_clump: 62
red_giants - red_clump: 592

Fe: 0
Mg: 0
Ca: 0
Na: 0
```



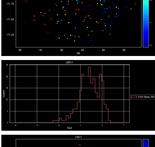


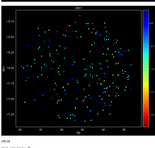


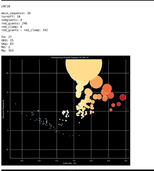


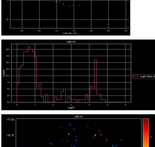


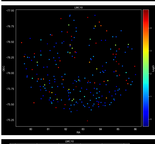
```
mapfunds: 7633

##################################################
##################################################

main_sequence: 317
turnoff: 19
subgiants: 1
red_giants: 625

'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6'
'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6'
'NGC6' 'NGC6' 'NGC6' 'NGC6' 'NGC6'

##################################################
##################################################

NGC6

main_sequence: 58
turnoff: 19
subgiants: 1
red_giants: 208
red_clump: 39
red_giants - red_clump: 247

Fe: 0
Mg: 0
Ca: 0
Na: 0
```





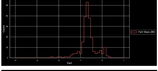


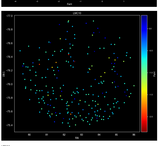




GC18

```
main_sequence: 35
turnoff: 19
subgiants: 1
red_giants: 148
red_clump: 26
red_giants - red_clump: 242

Fe: 0
Mg: 0
Ca: 0
Na: 0
```

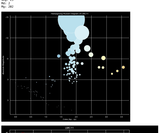


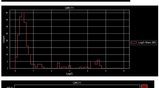


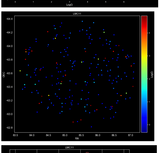
LM 11

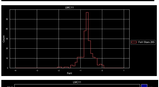
main_progenitor: 28
haloprob: 0
subhaloflag: 1
nsubgroups: 1
ind_pseudo: 0
ind_clump: 1 ind_clump: 230

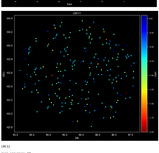
Dx: 22
Dy: 21
Dz: 21
Mx: 0
My: 0
Mz: 0







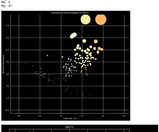


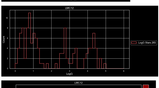


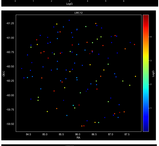
LM 12

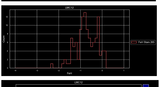
main_progenitor: 17
haloprob: 0
subhaloflag: 1
nsubgroups: 1
ind_pseudo: 0
ind_clump: 1 ind_clump: 236

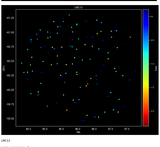
Dx: 27
Dy: 25
Dz: 25
Mx: 0
My: 0
Mz: 0







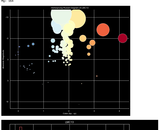


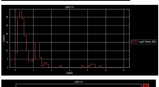


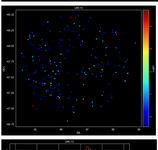
LM 13

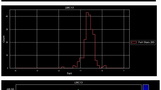
main_progenitor: 4
haloprob: 0
subhaloflag: 1
nsubgroups: 298
ind_pseudo: 0
ind_clump: 1 ind_clump: 257

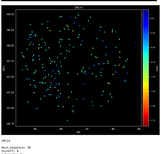
Dx: 31
Dy: 31
Dz: 31
Mx: 0
My: 0
Mz: 0







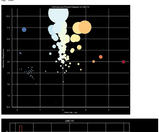


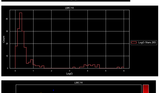


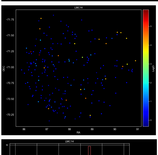
LM 14

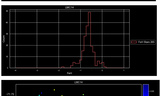
main_progenitor: 18
haloprob: 0
subhaloflag: 1
nsubgroups: 242
ind_pseudo: 0
ind_clump: 1 ind_clump: 244

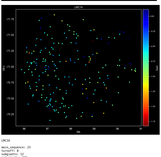
Dx: 35
Dy: 35
Dz: 35
Mx: 0
My: 0
Mz: 0









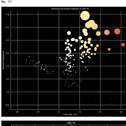


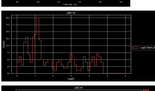
LM 15

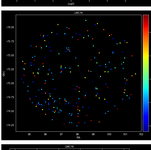
main_progenitor: 23
haloprob: 0
subhaloflag: 1
nsubgroups: 311
ind_pseudo: 0
ind_clump: 1 ind_clump: 236

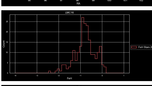
Dx: 37
Dy: 37
Dz: 37
Mx: 0
My: 0
Mz: 0

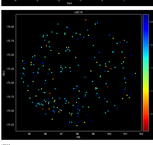
Mg: 12







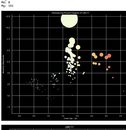


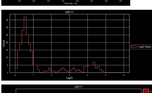


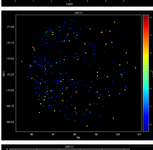
LM12

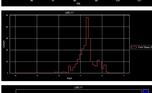
main_sequence: 15
halo: 0
subgiants: 0
red_giants: 0
red_clump: 212
red_giants + red_clump: 248

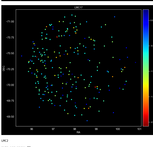
Fe: 0
Ca: 0
Mg: 10
Ti: 10
Na: 10







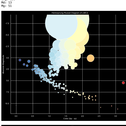


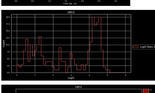


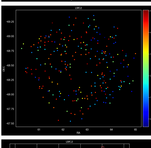
LM13

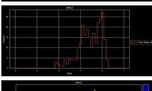
main_sequence: 30
halo: 0
subgiants: 0
red_giants: 0
red_clump: 243
red_giants + red_clump: 243

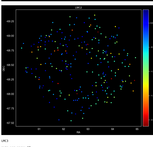
Fe: 0
Ca: 0
Mg: 10
Ti: 10
Na: 10







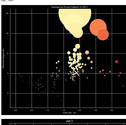


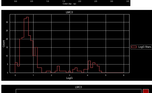


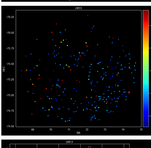
LM14

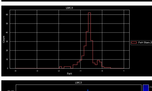
main_sequence: 10
halo: 0
subgiants: 0
red_giants: 0
red_clump: 0
red_giants + red_clump: 231

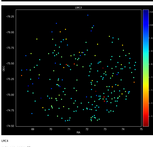
Fe: 0
Ca: 0
Mg: 10
Ti: 10
Na: 10







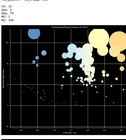


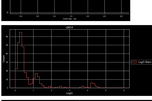


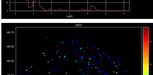
LM15

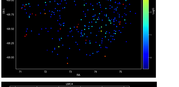
main_sequence: 11
halo: 0
subgiants: 0
red_giants: 0
red_clump: 413
red_giants + red_clump: 413

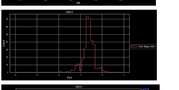
Fe: 0
Ca: 0
Mg: 10
Ti: 10
Na: 10

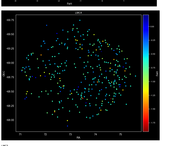








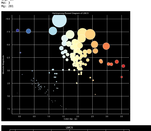


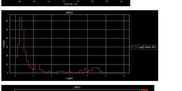


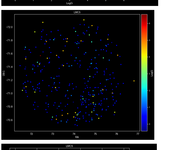
GP3

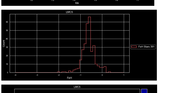
main_separator: 25
hydrogen: 0
temperature: 0
red_quantu: 0
red_quantu: 357
red_quantu: 0
red_quantu - red_clump: 350

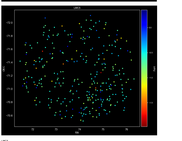
Dec: 0
Ra: 0
Mag: 0
Mag: 0
Mu: 0







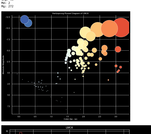


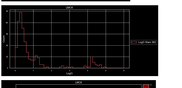


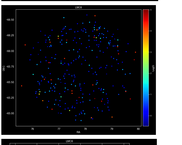
GP4

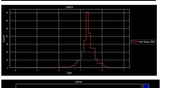
main_separator: 23
hydrogen: 0
temperature: 0
red_quantu: 324
red_quantu: 0
red_quantu - red_clump: 323

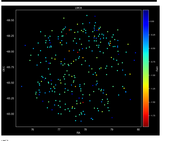
Dec: 0
Ra: 0
Mag: 0
Mag: 0
Mu: 0







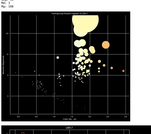


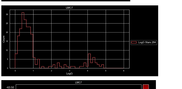


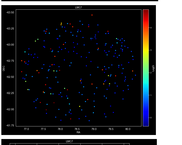
GP5

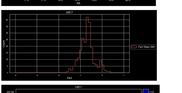
main_separator: 36
hydrogen: 0
temperature: 0
red_quantu: 313
red_quantu: 0
red_quantu - red_clump: 240

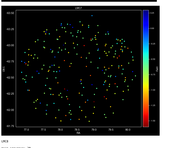
Dec: 0
Ra: 0
Mag: 0
Mag: 0
Mu: 0







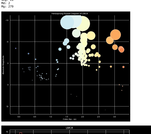


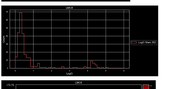


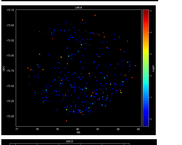
GP6

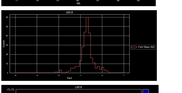
main_separator: 28
hydrogen: 0
temperature: 0
red_quantu: 316
red_quantu: 0
red_quantu - red_clump: 326

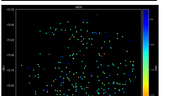
Dec: 0
Ra: 0
Mag: 0
Mag: 0
Mu: 0





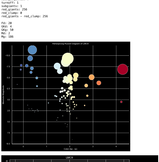


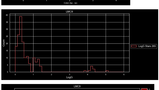


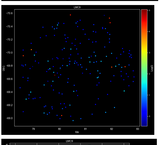


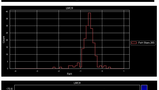
LM13

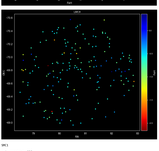
```
main_sequence: 7
turnoff: 18
subgiants: 0
red_giants: 19
red_clump: 0
red_giants - red_clump: 250

Fe: 28
Mg: 28
Ba: 0
Mg: 28
Ba: 0
```





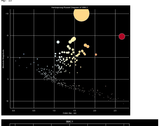


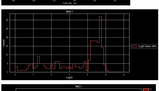


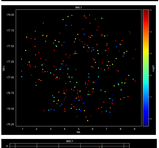


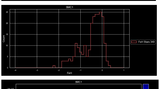
LM14

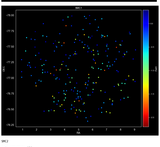
```
main_sequence: 118
turnoff: 0
subgiants: 0
red_giants: 0
red_clump: 0
red_giants - red_clump: 281

Fe: 28
Mg: 28
Ba: 28
Mg: 28
Ba: 28
```





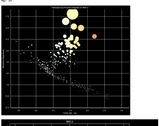


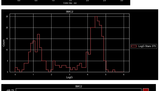


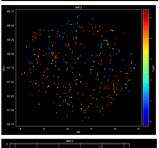


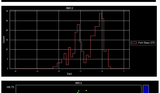
LM12

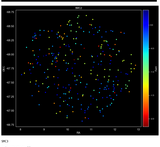
```
main_sequence: 119
turnoff: 0
subgiants: 0
red_giants: 11
red_clump: 0
red_giants - red_clump: 286

Fe: 28
Mg: 28
Ba: 28
Mg: 28
Ba: 28
```





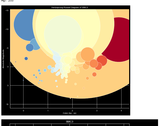


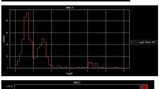


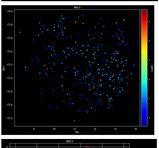


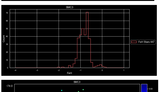
SF1.1

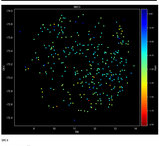
```
main_sequence: 18
turnoff: 0
subgiants: 0
red_giants: 439
red_clump: 0
red_giants - red_clump: 439

Fe: 0
Mg: 27
Ba: 0
Mg: 0
```





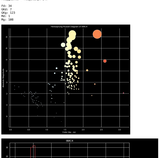


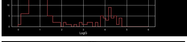


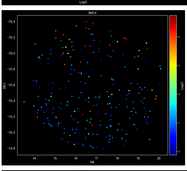


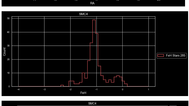
SF4

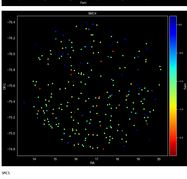
```
main_sequence: 37
turnoff: 18
subgiants: 0
red_giants: 248
red_clump: 0
red_giants - red_clump: 247

Fe: 0
Mg: 0
Mg: 113
Ba: 0
Mg: 0
```





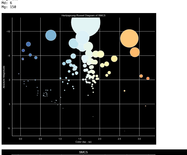


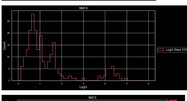


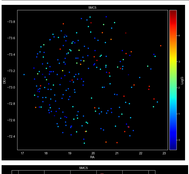


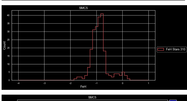
DPC5

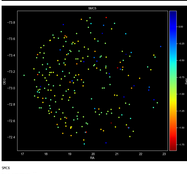
```
main_sequence: 10
turnoff: 0
subgiants: 0
red_giants: 282
red_clump: 4
red_giants - red_clump: 281

fe: 20
Q0a: 0
Q0b: 242
Mv: 4
Mg: 5.9
```





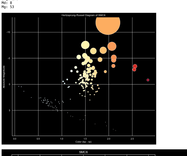


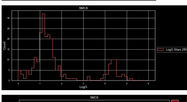


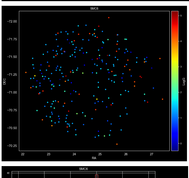


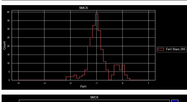
DPC6

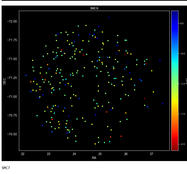
```
main_sequence: 35
turnoff: 0
subgiants: 1
red_giants: 248
red_clump: 4
red_giants - red_clump: 238

fe: 21
Q0a: 0
Q0b: 234
Mv: 4
Mg: 5.1
```





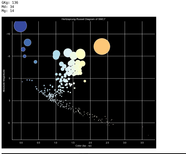


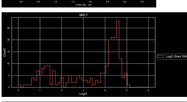


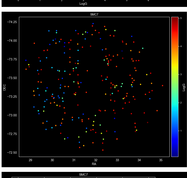


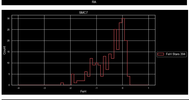
DPC7

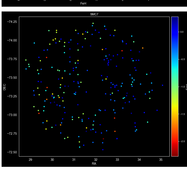
```
main_sequence: 100
turnoff: 2
subgiants: 0
red_giants: 156
red_clump: 4
red_giants - red_clump: 149

fe: 35
Q0a: 100
Q0b: 136
Mv: 4
Mg: 5.8
```











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