Running GOG in the VM

Besançon School for Galaxy modelling

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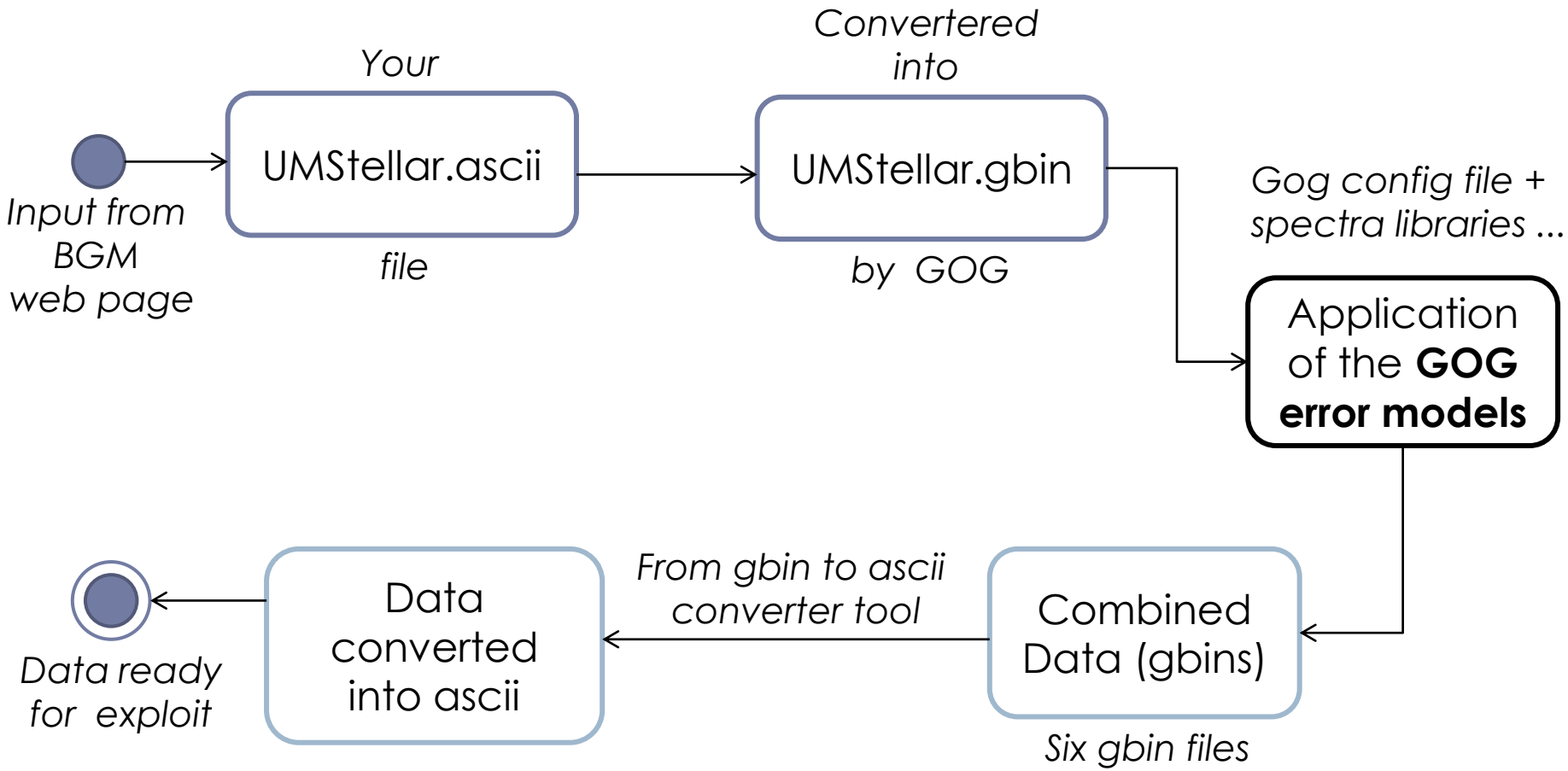
GOG: Gaia Object Generator



Index in GOG code	Name	Format (fortran)	Units, comments, ...
0	**sourceExtendedId**	A1	* means the source is a MW star
1	sourceExtendedId	A16	Not used, will be generated inside GOG
2	**nc**	2X,I1	Number of components of a multiples system
3	**nt**	2X,I1	Total number of object
4		A1	(blank)
5	**host**	1X,I1	1=Milky Way
6	**Astrometry[alpha]**	1X,F14.10	degrees
7	**Astrometry[delta]**	1X,F14.10	degrees
8	**Astrometry[distance]**	1X,F14.4	pc
9	**Astrometry[muAlpha]**	1X,F10.4	mas/yr
10	**Astrometry[mudelta]**	1X,F10.4	mas/yr
11	**Astrometry[radialVelocity]**	1X,F10.4	Km/s
12	ipop	1X,I2	Population flag from BGM (1 to 15)
13	Population [1]	1X,F9.4	Age (Gyr)
14	**feH**	1X,F9.4	dex
15	AlphaFe	1X,F9.4	dex
16	**Visual Absorption - Av**	1X,F9.4	mag
17	**Rv: Total to selective abs.**	1X,F5.2	Adimensional
18	Photometry[magG] [2]	1X,F7.4	mag
19	Photometry[magGRp] [2]	1X,F7.4	mag
20	Photometry[magGBp] [2]	1X,F7.4	mag
21	Photometry[magGRvs] [2]	1X,F7.4	mag
22	**colorVminusI**	1X,F7.4	Intrinsic (V-I) colour
23	**meanAbsoluteV**[3]	1X,F7.4	Mv: visual absolute magnitude (mag)
24	mbol	1X,F7.4	
25	mass	1X,F7.4	
26	radius	1X,F10.4	
27	**Teff**	1X,F9.2	K
28	**logg**	1X,F4.2	dex
29	SpectralType[4]	1X,A1,I1	Spectral Type
30	vsini	1X,I1	Vsini (Km/s)
31		1X,F7.4	Parameters describing variability for emission line stars
32		1x,F4.1	
33		1X,I2	

Before run:

1. Check the UMStellar.ascii is located in :

```
$cd  /phoenix/UMStellar.ascii
```

2. And the gog configuration file:

```
$cd  /phoenix/gogconfig.xml
```

3 Open the gogconfig.xml to check the following labels:

```
<InputSourcesType>userSources</InputSourcesType>


<UniverseModel>

        <LimitFaintMagnitude> 20.0 </LimitFaintMagnitude>
        <LimitBrightMagnitude> 6.0 </LimitBrightMagnitude>


        <GalaxyModel>On</GalaxyModel>
        <UnresolvedGalaxyModel>Off</UnresolvedGalaxyModel>
        <QSOModel>Off</QSOModel>
        <SolarSystemModel>Off</SolarSystemModel>
        <HIIRegionModel>Off</HIIRegionModel>
        <OpenClusterModel>Off</OpenClusterModel>
        <SuperNovaModel>Off</SuperNovaModel>
        <LMCModel>Off</LMCModel>
        <SMCModel>Off</SMCModel>

        <ExtinctionModel>Drimmel</ExtinctionModel>

        <MultipleSourcesModel>On</MultipleSourcesModel>
        <ExoplanetModel>Off</ExoplanetModel>
        <VariabilityModel>Off</VariabilityModel>
```

4 Check all the parameters for input

```
<UserSourceFile>/home/gog/phoenix/UMStellar.gbin</UserSourceFile>

<SpectraSimulationMode>library</SpectraSimulationMode>
```

... and output are properly configured:

```
<Output>
        <Data type="noise" value="On"/>
        <Data type="useHealpixId" value="Off"/>

        <Data type="source" value="On"/>
        <Data type="epochParameters" value="Off"/>
        <Data type="combinedParameters" value="On"/>
        <Data type="epochRPBPSpectra" value="Off"/>
        <Data type="combinedRPBPSpectra" value="Off"/>
        <Data type="epochRVSSpectra" value="Off"/>
        <Data type="combinedRVSSpectra" value="Off"/>
        <Data type="auxiliaryData" value="Off"/>
</Output>
```

Command for running!

```
$ AsciiGog
```

Name	Units	Comments
age	Gyr	
alphaFe	dex	
Astrometry[alpha]	degrees	
Astrometry[delta]	degrees	
Astrometry[distance]	pc	
Astrometry[muAlpha]	mas/yr	
Astrometry[mudelta]	mas/yr	
Astrometry[radialVelocity]	Km/s	
bondAlbedo		
colorVminusI	mag	Intrinsic (V-I)
excentricity		
feH	dex	dex
flaginteracting		
geomAlbedo		
hasPhotocenterMotion		
host		'1' indicates that the source belong to the MW
inclination		
logg	dex	dex
longitudeAscendingNode		
mass		Solar mass
mbol	mag	mag
meanAbsoluteV	mag	mag
nc		
nt		
orbitPeriod		
periastronArgument		
periastronDate		
phase		
Photometry[magG]	mag	mag
Photometry[magGBp]	mag	mag
Photometry[magGRp]	mag	mag
Photometry[magGRvs]	mag	mag
Population		
rEnvRStar		
radius		
semimajorAxis		
SpectralType		Not used in the error computation but shall have a realistic values (OBAFGKM)
Teff	Kelvin	
variabilityAmplitude		
variabilityPeriod		
variabilityPhase		
vsini		
sourceExtendedId		
sourceId		

UMStellar.gbin **FORMAT**

Output

Astrometric Data

CU3

Photometric Data

CU5

RVS Data

CU6

Astrophysical Data

CU8

Astrometric Data

CU3

FORMAT

CU3 Astrometric data : mdbcu3agissource_gog10_0_beta.gbin

CU3 Astrometric data	units	Comments
alpha	rad	
alphaError	mas	
delta	rad	
deltaError	mas	
muAlphaStar	mas/yr	
muAlphaStarError	mas/yr	
muDeltaStar	mas/yr	
muDeltaStarError	mas/yr	
radialVelocity	km/s	
radialVelocityError	km/s	
refEpoch	[null]	TBC
varpi	mas	Parallax
varpiError	mas	Error in parallax

Photometric Data

CU5

FORMAT

CU5 Photometric data : mdbcu5calphotsource_gog10_0_beta.gbin

(to be read using MDB v11.o)

CU3 Astrometric data	units	Comments
bpmean[flux]		
bpmean[fluxerror]		
rpmean[flux]		
rpmean[fluxerror]		
gpmean[flux]		
gpmean[fluxerror]		
Bpmean[flux]		

RVS
Data

CU6

FORMAT

CU6 RVSdata : mdbcu6sourcestellarsourcemeancharacteristics_gog10_0_beta.gbin

CU3 Astrometric data	units	Comments
gRvs[value]	mag	
gRvs[gmdberror]	mag	

Astrophysical Data

CU8

FORMAT

CU3 Astrometric data	units	Comments
a0[val]	mag	Zero point extinction law (Cardelli et al.)
a0[gmdberror]	mag	
feH1[val]	dex	
feH1[mdberror]	dex	
Teff1 [val]	kelvin	
Teff1[mdberror]	kelvin	
logG1[val]	dex	
logG1[mdberror]	dex	

Tools for exploit the data

1. MDB Explorer:
   Located in: `$ cd /Gbins/mdbexplorer`
   `(just double click)`

2. From GBIN to ASCII converter:
   Located in: `$ cd /Gbins/gbcat`

```
$ gbcat mdbcu5...
$ gbcat -m <FILENAME>
$ gbcat -c"COLUMNNAME1,COLUMNNAME2"
$ >myoutput
```

3. TOPCAT
   Located in: `$ cd /bin/topcat`

More info...

Wiki page of the school
`Great.ast.cam.ac.uk/GreatWiki/VMsetup`

Thank you!