



Modèle de la galaxie de Besançon

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Table of Contents

- 1 Historique
- 2 Architecture informatique générale
- 3 Statistique des utilisations
- 4 Perspectives

1ère version en ligne du modèle de la Galaxie de Besançon par F. Gazelle, A. Robin, B. Goidet-Devel en 1994

Repères chronologiques :

- début du web : 1990
- premier site web français : automne 1992



Pergamon

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The WWW Server of Observatoire de Besançon

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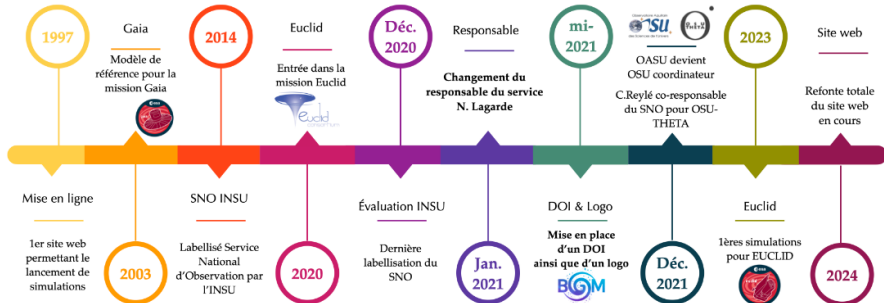
[†] Observatoire de Strasbourg, France

The WWW server of Observatoire de Besançon provides access to a model of stellar population synthesis and to an asteroidal polarimetric database. Through forms, the WWW server of Besançon Observatory provides an access to a detailed model of our Galaxy. A synthetic approach has been used to build this model. We link the kinematical and dynamical point of view to an evolution scheme through a key parameter: the stellar ages. The age distribution of stars in the solar neighbourhood is derived from a model of galactic evolution. The stellar populations of the galactic disc are self-consistently constrained by the Boltzmann and Poisson equation through the potential of the mass model. Thus we directly derive observational predictions from an overall description of galactic structure and evolution. Model simulations are produced in the form of catalogues of pseudo-stars, tables of statistical distributions or integrated luminosity in any given photometric band.

The WWW server of Besançon Observatory also provides access to the POLARIS database that we have constructed in collecting all the polarimetric measurements (extracted from the literature including our own observations) and polarization curves for every asteroid for which enough points were available. Currently, a PostScript file is available on the WWW server for each asteroid. A search by name, number, type and diameter will be available in the near future.

Historique

- Modèle de synthèse de populations stellaires utilisé pour construire une vision globale de la Galaxie.
- Permet d'obtenir en sortie un catalogue des propriétés des étoiles de la Galaxie, directement comparables aux observations faites par différents relevés observationnels. (GAIA, EUCLID, PLATO)
- Lien vers le service <https://model.obs-besancon.fr/>
- Première version du site en 1994 (F. Gazelle, A. Robin)



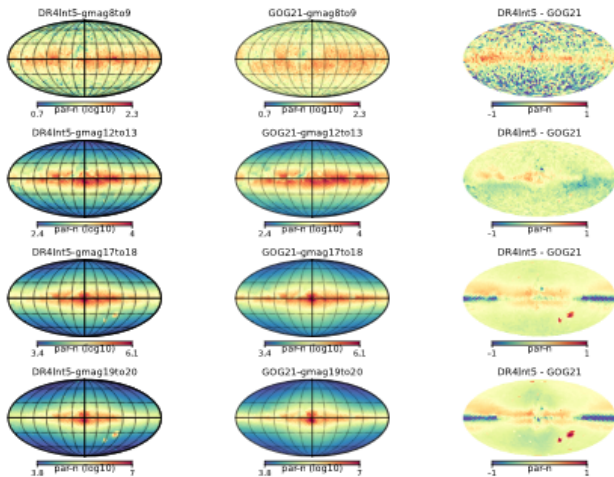
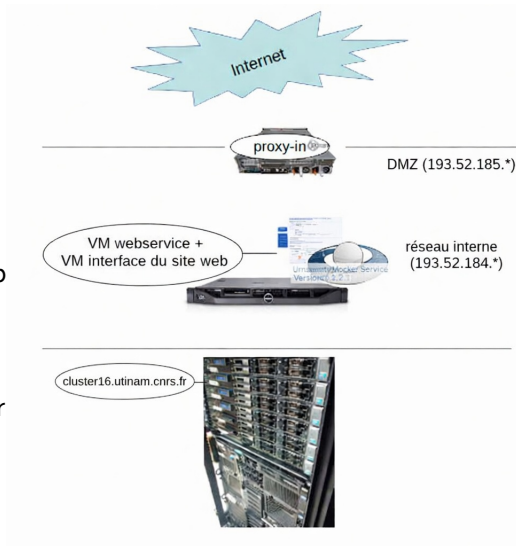


Figure 1: Star counts in DR4 (left panels), GOG21 (middle panels), and relative difference (right panels) are shown for four magnitude ranges: $8 < G < 9$ (top row), $12 < G < 13$ (second row), $17 < G < 18$ (third row), and $19 < G < 20$ (bottom row). A relative difference $-(DR4-GOG21)/DR4$ – of +1 (resp. -1) corresponds to a deficit (resp. an excess) of 100% in GOG21 model with regards to DR4 data.

Architecture générale

- Point d'entrée : proxy http[s]
proxy-in.obs-besancon.fr
- 1 VM interface web + 1VM web service
- Simulations effectuées sur cluster : cluster16.utinam.cnrs.fr



Interface du site web + Webservice

- intégralement écrite en PHP (menu, rubriques, ...)
- Web service UWS : Il crée le fichier de paramètres, transfère sur le cluster les fichiers (paramètres, script de lancement) lance la simulation sur le gestionnaire de file d'attente OAR
- client en python du web service : "galmod_client.py"

Simple counts as a function of magnitude without kinematics, Johnson-Cousins photometric system model version m1612, with kinematics from RAVE+TGAS

To get help on parameters and values to supply, click on **?**

Field of view

Distance interval kpc kpc

Distance step mode

Field

Coordinate system:

galactic coordinates

equatorial coordinates

Field type:

small field (defined by the center of the field and its surface)

Longitude (decimal degrees) Latitude (decimal degrees) Solid angle (deg²)

large field (field defined by interval of sky coordinates)

Extinction distribution **?**

diffuse extinction by a dusty disk

diffuse extinction by a dusty disk with discrete clouds

Fitzpatrick et al. extinction model (100°$A_{V,0}$=1.00, -15°$A_{V,0}$=0.1) and diffuse extinction for higher latitudes and longitudes

Dispersion on the extinction $A_{V,0}$

Selection on **?**

absolute magnitude

spectral type and subtype **?**

type subtype (D-6) type subtype (S-6)

luminosity class:

age and/or populations **?**

Photometry

Apparent magnitude passband

Intervals of apparent magnitude for each passband **?**

U	<input type="text" value="-99.00"/>	<input type="text" value="99.00"/>	B	<input type="text" value="-99.00"/>	<input type="text" value="99.00"/>
V	<input type="text" value="10.00"/>	<input type="text" value="18.00"/>	R	<input type="text" value="99.00"/>	<input type="text" value="99.00"/>
I	<input type="text" value="-99.00"/>	<input type="text" value="99.00"/>	Z	<input type="text" value="-99.00"/>	<input type="text" value="99.00"/>
H	<input type="text" value="-99.00"/>	<input type="text" value="99.00"/>	N	<input type="text" value="-99.00"/>	<input type="text" value="99.00"/>
L	<input type="text" value="-99.00"/>	<input type="text" value="99.00"/>			

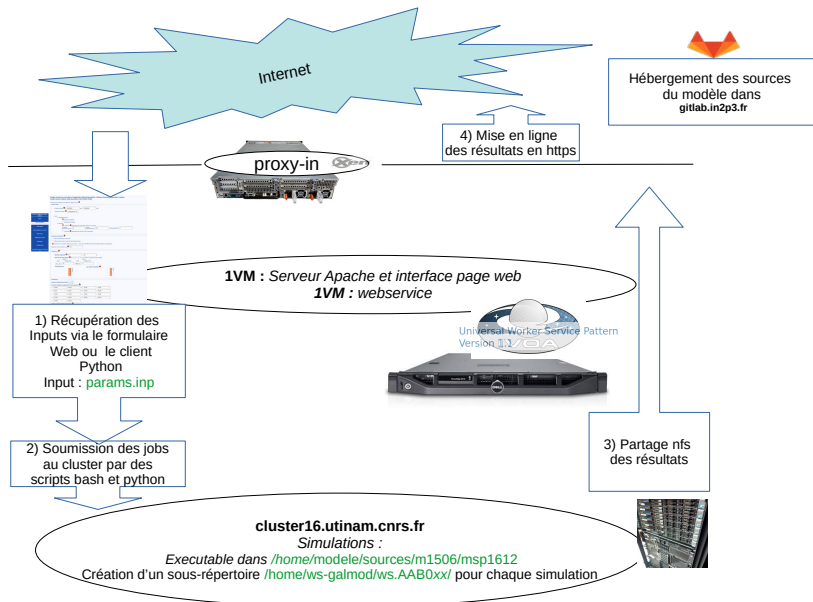
Cluster de calcul

cluster16.utinam.cnrs.fr :
Contient:

- Arborescence du code
- les exécutables du modèle
- les fichiers de données utilisés par le modèle
- un répertoire pour chaque simulation
- Récupération d'un catalogue d'étoile (position, température, distance, âge, couleur, vitesse, composition chimique..)

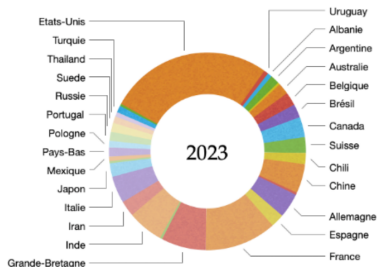
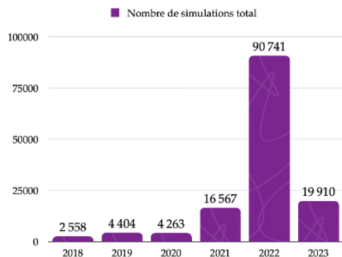
id	V	B-V	U-B	V-I	V-K	nux	muy	HRV	UU	VV	MV	Px	Mv	e
latitude	RAJ2000	DECJ2000	errBand_U	errBand_I	errBand_K	x_Gal	y_Gal	z_Gal	Av	errPx	errMux	errMuy	errHrv	e
17.963	1.642	1.324	2.816	5.335	42.893	0.298	-0.26	12.84	9.25	-1.69	0.01269	13.46		
79.899002	199.994247	35.183971	0.8788	-7.9994	0.0138	0.0926	0.034	0.0000	1.0000	1.0000				
0.0103	-0.0110	-0.0081	0.0009	-0.0054										
16.310	1.551	1.167	2.387	4.666	-21.598	34.752	-5.75	-15.35	4.70	-7.86	0.01167	11.58		
80.356186	198.945633	35.252281	0.8657	-8.0005	0.0144	0.0995	0.046	0.0000	1.0000	1.0000				
0.0222	0.0209	0.0118	0.0070	-0.0120										
16.321	1.477	1.123	2.146	4.257	-2.723	-10.589	-17.69	2.66	-8.90	-14.67	0.00818	10.84		
80.332222	199.165115	35.156208	0.1222	-8.0002	0.0205	0.1355	0.046	0.0000	1.0000	1.0000				
0.0029	-0.0112	-0.0210	0.0014	-0.0209										
15.834	1.468	1.142	2.065	4.125	-32.290	-15.017	-19.26	-10.81	-20.57	-15.09	0.00800	10.30		
79.758560	199.245987	35.008403	0.1250	-8.0009	0.0222	0.1380	0.049	0.0000	1.0000	1.0000				
0.0054	0.0013	-0.0168	0.0095	0.0139										
11.826	0.967	0.785	0.884	2.189	19.239	-50.197	-0.76	27.14	-16.90	1.21	0.00785	6.29		
79.569397	200.171677	35.490704	0.1273	-7.9992	0.0230	0.1402	0.049	0.0000	1.0000	1.0000				
0.0345	-0.0007	0.0209	0.0226	0.0094										
11.631	0.990	0.774	0.942	2.306	-9.819	-59.204	-6.55	16.84	-33.83	-2.86	0.00787	6.86		
79.591278	199.546295	35.044337	0.1270	-8.0006	0.0229	0.1399	0.049	0.0000	1.0000	1.0000				
0.0005	-0.0013	-0.0471	0.0282	-0.0280										
17.822	1.570	1.254	2.498	4.822	-73.027	33.631	-21.50	-57.18	-14.93	-19.15	0.00668	11.86		
79.575584	199.751801	35.744370	0.1497	-8.0002	0.0271	0.1622	0.064	0.0000	1.0000	1.0000				
0.0186	-0.0138	0.0029	0.0137	0.0034										
17.758	1.680	1.286	2.345	4.568	-12.427	-33.733	-37.98	5.96	-31.01	-33.64	0.00673	11.86		
79.874123	199.958130	35.239712	0.1486	-7.9990	0.0261	0.1613	0.060	0.0000	1.0000	1.0000				
0.0284	0.0043	-0.0002	-0.0019	-0.0093										

Architecture générale



Intérêt et Utilisation du SNO - BGM

Le service est utilisé dans différent pays du monde (32 pays dans le monde en 2023)



- Changement de l'architecture pour la migration du cluster de calcul à Chesium
- Mise en place de nouvelles vms pour le calcul
- Amélioration de la résilience
- Optimisation et réécriture du code de calcul
- Mise en ligne des nouveaux développements scientifiques