GCfit

Globular Cluster Observation Data

Data File Catalog

Version 1

1 Introduction

in a hdf file..... etc

All supplementary error datasets can be either the symmetric dataset or two seperate down and up error datasets.

Everything should be within the given "key" group under the main file group. But if multiple "versions" of the datasets are to be used, then you can put everything under other groups under the key, which should be sorted out correctly under data.

But, this MUST be done for everything in that group, all parent groups of subgroups will not be read in data, so there can be no shared space for groups and datasets. All datasets must go under the lowest level of subgroup.

2 Attributes

key: `/initials`

All the values which are fit on these are the initial guesses defaults are used if this isnt in the file, or any field is missing

Variable	Attribute Name	Description	Default Value
W_0	`W0`	Central potential	6.0
M	`M`	Total cluster mass [$10^6 M_\odot$]	0.69
r_h	`rh`	Half-mass radius [pc]	2.88
$\log(r_a)$	`ra`	Anisotropy radius [$\log(pc)$]	1.23
g	`g`	Truncation parameter	0.75
δ	`delta`		0.45
s^2	`s2`	Velocity scale nuisance parameter	0.1
F	`F`	Mass function nuisance parameter	0.45
a_1	`a1`	1st mass function power law exponent	0.5
a_2	`a2`	2nd mass function power law exponent	1.3
a_3	`a3`	3rd mass function power law exponent	2.5
BH_{ret}	`BHret`	Black hole initial retention fraction	0.5
d	`d`	Cluster distance [Mpc]	6.405

3 Data Products

3.1 Number Density

key: `/number_density`

3.1.1 Datasets

Variable	Dataset Name	Supplementary Datasets	attributes
Radial distance	`r`		`units`
Number Density	Σ	$\Delta\Sigma$	`units`

3.1.2 Attributes

Attribute	Description
source	Literature source(s) of data
m	Mean stellar mass of tracer stars [$M_\odot$]

3.2 Pulsar Accelerations

key: /pulsar

3.2.1 Datasets

Variable	Dataset Name	Supplementary Datasets	attributes
Radial distance	r		units
LOS acceleration	a_los	Δa_los	units method a_g a_s
Intrinsic acceleration	a_int		units method B
Spin period	P	ΔP	units
Spin period derivative	dP_meas	ΔdP_meas	units
Pulsar identifier	id		

3.2.2 Attributes

Attribute	Description
source	Literature source(s) of data

3.3 Proper Motions

key: /proper_motion

3.3.1 Datasets

Variable	Dataset Name	Supplementary Datasets	attributes
Radial distance	r	Δr	units
Total proper motion	PM_tot	ΔPM_tot	units
Proper motion ratio	PM_ratio	ΔPM_ratio	method
Radial proper motion	PM_R	ΔPM_R	units
Tangential proper motion	PM_T	ΔPM_T	units

3.3.2 Attributes

Attribute	Description
source	Literature source(s) of data
m	Mean stellar mass of tracer stars [$M_\odot$]

3.4 Velocity Dispersions

key: /velocity_dispersion

3.4.1 Datasets

Variable	Dataset Name	Supplementary Datasets	attributes
Radial distance	r		units
LOS velocity dispersion	σ	$\Delta\sigma$	units

3.4.2 Attributes

Attribute	Description
source	Literature source(s) of data
m	Mean stellar mass of tracer stars [$M_\odot$]

3.5 Mass Functions

key: /mass_function

3.5.1 Datasets

Variable	Dataset Name	Supplementary Datasets	attributes
Number of stars	N		
Mass bin number	bin		
Mass bin width	mbin_width		units method
Mass bin mean	mbin_mean		units method
Poisson measurement error	Δmbin		method
Mass bin left boundary	mbin_left		units
Mass bin right boundary	mbin_right		units

3.5.2 Attributes

Attribute	Description
source	Literature source(s) of data