

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 parameters which are fit on

these values 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

* denotes required fields

3.1 Number Density

key: /number_density

3.1.1 Datasets

Variable	Dataset Name	Supplementary Datasets	attributes
Radial distance	\mathbf{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	\mathbf{r}^*		units
LOS acceleration	$\mathbf{a_los}^*$	$\Delta\mathbf{a_los}$	units method a_g a_s
Intrinsic acceleration	$\mathbf{a_int}$		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	\mathbf{r}^*	$\Delta\mathbf{r}$	units
Total proper motion	PM_tot	$\Delta\text{PM_tot}$	units
Proper motion ratio	PM_ratio	$\Delta\text{PM_ratio}$	method
Radial proper motion	PM_R	$\Delta\text{PM_R}$	units
Tangential proper motion	PM_T	$\Delta\text{PM_T}$	units

Atleast one of these is req'd, and must have corresponding errors

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	\mathbf{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