

## GYRE Stellar Model (GSM) Format

GSM-format files store data describing a stellar model in an HDF5-format file. The attributes of the root group contain global stellar parameters, while 1-D datasets contained within the root group specify the structure data on a grid of  $n$  points extending from center to surface. These attributes and datasets are defined as follows:

Variable	Object name	(A)tttribute / (D)ataset	Object datatype	Definition
$R_*$	R_star	A	H5T_IEEE_F64LE	Stellar radius (cm)
$M_*$	M_star	A	H5T_IEEE_F64LE	Stellar mass (g)
$L_*$	L_star	A	H5T_IEEE_F64LE	Stellar luminosity ( $\text{erg s}^{-1}$ )
$n$	n	A	H5T_STD_I64LE	Number of grid points
$r$	r	D	H5T_IEEE_F64LE	Radius (cm)
$w$	w	D	H5T_IEEE_F64LE	$M_r/(M_* - M_r)$
$L_r$	L_r	D	H5T_IEEE_F64LE	Luminosity ( $\text{erg s}^{-1}$ )
$p$	p	D	H5T_IEEE_F64LE	Total pressure ( $\text{dyn cm}^{-2}$ )
$T$	T	D	H5T_IEEE_F64LE	Temperature (K)
$\rho$	rho	D	H5T_IEEE_F64LE	Density ( $\text{g cm}^{-2}$ )
$N^2$	N2	D	H5T_IEEE_F64LE	Brunt-Väisälä frequency squared ( $\text{s}^{-2}$ )
$\Gamma_1$	Gamma_1	D	H5T_IEEE_F64LE	$(\partial \ln p / \partial \ln \rho)_{\text{ad}}$
$\nabla_{\text{ad}}$	nabla_ad	D	H5T_IEEE_F64LE	$(d \ln T / d \ln p)_{\text{ad}}$
$\delta$	delta	D	H5T_IEEE_F64LE	$-(\partial \ln \rho / \partial \ln T)_p$
$\nabla$	nabla	D	H5T_IEEE_F64LE	$d \ln T / d \ln p$
$\kappa$	kappa	D	H5T_IEEE_F64LE	Opacity ( $\text{cm}^2 \text{g}^{-1}$ )
$\kappa_T$	kappa_T	D	H5T_IEEE_F64LE	$(\partial \ln \kappa / \partial \ln T)_\rho$
$\kappa_\rho$	kappa_rho	D	H5T_IEEE_F64LE	$(\partial \ln \kappa / \partial \ln \rho)_T$
$\epsilon$	epsilon	D	H5T_IEEE_F64LE	Energy generation rate ( $\text{erg s}^{-1} \text{g}^{-1}$ )
$\epsilon_T$	epsilon_T	D	H5T_IEEE_F64LE	$(\partial \epsilon / \partial \ln T)_\rho$ ( $\text{erg s}^{-1} \text{g}^{-1}$ )
$\epsilon_\rho$	epsilon_rho	D	H5T_IEEE_F64LE	$(\partial \epsilon / \partial \ln \rho)_T$ ( $\text{erg s}^{-1} \text{g}^{-1}$ )
$\Omega_{\text{rot}}$	Omega_rot	D	H5T_IEEE_F64LE	Rotation angular velocity ( $\text{rad s}^{-1}$ )