EXOHABITAI DATASET DESCRIPTION

This CSV is an astronomical catalog of exoplanets discovered with the **TESS (Transiting Exoplanet Survey Satellite)** mission, with columns describing planet properties, host stars, how they were discovered, and photometric measurements. The most important attributes fall into a few logical groups: identification, discovery details, planetary properties, orbital parameters, stellar properties, and photometry/magnitudes.

Dataset Overview :

- **Total Rows:** 8018
- **Total Columns:** 289
- **Each Row Represent:** One Exoplanet
- **Each Column Represents:** Details regarding a property or measurement of the planet, its star, or its discovery.
- **Dataset_Source**:(NASA_Exoplanet_Archive) https://exoplanetarchive.ipac.caltech.edu/cgi-bin/TblView/nph-tblView?app=ExoTbls&config=PS&constraint=default_flag=1&constraint=disc_facility+like+%27%25TESS%25%27

Identification Attributes :

- **Planet and host names:** pl_name, hostname, pl_letter, hd_name, hip_name, tic_id, gaia_dr2_id, gaia_dr3_id identifies each planet and its star.
- **System makeup:** sy_snum (stars in system), sy_pnum (planets), sy_mnum (moons), cb_flag (circumbinary planet or not).

Discovery and detection attributes :

- **Discovery context**: discoverymethod (e.g., Transit, Radial Velocity), disc_year, disc_refname, disc_pubdate, disc_locale, disc_facility, disc_telescope, disc_instrument, disc_facility constrained to include TESS in this file.
- **Detection technique flags:** rv_flag, pul_flag, ptv_flag, tran_flag, ast_flag, obm_flag, micro_flag, etv_flag, ima_flag, dkin_flag (each flag indicates whether that technique contributed to the detection).
- **Solution/meta flags:** default_flag (default parameter set), soltype (solution type), pl_controv_flag (controversial planet status), ttv_flag (transit timing variations present).

Planet physical properties :

- **Radius:** pl_rade (radius in Earth radii), pl_radj (radius in Jupiter radii) with corresponding upper/lower uncertainty columns (pl_radeerr1, pl_radeerr2, pl_radjerr1, pl_radjerr2) and limit flags (pl_radelim, pl_radjlim).

- **Mass:** pl_masse and pl_massj (mass in Earth/Jupiter units), plus sin(i) - related masses (pl_msinie, pl_msinij, pl_cmasse, pl_cmassj, pl_bmasse, pl_bmassj) with their uncertainties and limit flags, and pl_bmassprov describing provenance.
- **Density and irradiation:** pl_dens (density with uncertainties and pl_denslim), pl_insol (insolation flux in Earth units with uncertainty and pl_insollim), pl_eqt (equilibrium temperature with uncertainties and pl_eqtlim).

Orbital and transit parameters :

- **Orbital elements:** pl_orbper (orbital period in days, plus pl_orbpererr1/2 and pl_orbperlim), pl_orbsmax (semi-major axis in au with uncertainties and pl_orbsmaxlim), pl_orbeccen (eccentricity with uncertainties and pl_orbeccenlim).
- **Geometry and timing:** pl_orbincl (inclination in degrees with uncertainties and pl_orbincllim), pl_tranmid (transit midpoint in days with errors and pl_tranmidlim), pl_tsystemref (time reference frame/standard).
- **Transit shape:** pl_imppar (impact parameter), pl_trandep (transit depth in percent), pl_trandur (transit duration in hours), each with upper/lower uncertainties and limit flags (pl_impparlim, pl_trandeplim, pl_trandurlim).

Stellar and photometric attributes :

- **Magnitudes:** Sloan bands (sy_umag, sy_gmag, sy_rmag, sy_imag, sy_zmag with err1/err2), WISE infrared (sy_w1mag–sy_w4mag with uncertainties), Gaia (sy_gaiamag with errors), Cousins I (sy_icmag), TESS (sy_tmag), Kepler (sy_kepmag).
- **Observational counts and notes:** st_nphot (number of photometry time series), st_nrvc (radial velocity series), st_nspec (stellar spectra), pl_nespec, pl_ntranspec, pl_ndispec (numbers of eclipse, transmission, direct-imaging spectra), pl_nnotes (notes count).

Administrative and date fields :

- **Dates:** rowupdate (last update date for that row), pl_pubdate (publication date for planetary parameters), releasedate (date the entry was released in the archive).
- Together with default_flag and reference-name columns, these help select the preferred, most up-to-date parameter set for analysis.