

Design for an Atlas of Extrasolar Planets

Section One. General Description of the Atlas

- I. **Purpose:** To provide a pictorial and tabular catalog of planets around stars other than our sun that is suitable for use as an aid to research. Especially, as a means of locating planets by some characteristics that they have.
- II. **Relevant Information:** The information that the Atlas will contain will be the following.
 1. The location of stars that have confirmed planets around them. The right ascension and declination of these stars for the current epoch will be listed.
 2. The planets' information organized by the stars that they orbit
 - a. Mass indicated by the size of a circle
 - b. Planet type such as terrestrial, gas, water, ice, etc., indicated by circle fill hatch
 - c. Planet's surface temperature indicated by color
 - d. Orbital radius from the parent star indicated by text above the circle
 - e. If the planet inhabits the star's habitable zone indicated by a green mark below the circle
 3. On a pictorial map, the information for planets around a star will be provided in a rectangular box that is centered on the map position of the right ascension and declination of the star. Additional information can be written around the periphery of the rectangular box.

Section Two. Layout of the Atlas

The Atlas begins with the standard front matter, preface, contents, and title page. The content that follows that section will be organized in a book format.

- I. A discussion of the planet hunting technologies by which extrasolar planets are found.
- II. Tabular Data
 - a. Accurate to best known values
 - b. Tables that will be provided are
 - i. Listing of stars with confirmed planets
 - ii. Listing of stars organized by the following attributes: Type, Mass, Age, Temperature
 - iii. Listing of stars by location
 - iv. Stars by number of known planets
 - v. A table of confirmed planets organized by
 - A. Type
 - B. Mass
 - C. Orbit
 - D. Zone (Habitable or not)
 - E. Temperature

III. An explanation of how to use the Atlas maps that explains

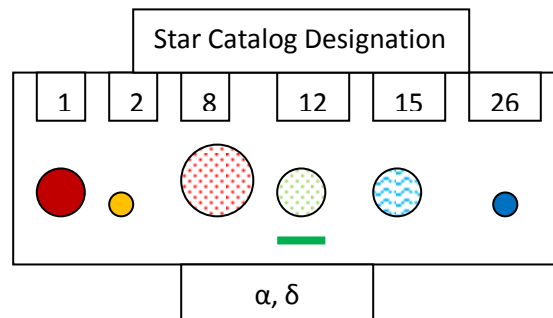
- a. Nomenclature
- b. Symbols

IV. Index to the preceding text

The index is placed here in the center to facilitate transitions from the more general pictorial information of the maps to the more detailed textual information and tables. The index should be certain to list star and planet designations that appear in the maps. Because of this placement of the index the maps are located between the index and the bibliography and references.

V. Pictorial Maps

- a. Summarizes planetary data on a map of the celestial sphere showing stars with planets and nearby stars.
- b. Maps of stars with planet-bearing stars indicated.
- c. Detailed maps showing planet-bearing stars and the data for the planets plus a few surrounding stars for positional reference



d. Example:

In this example of an entry in the pictorial star chart the box contains information about the planets that orbit the star at right ascension α and declination δ . The sizes of the circles indicate a planet's mass and their indicated values will be explained in a legend and in the instruction section of the atlas. The temperature is designated by color with this design using red for hot and blue for cool. This too must be explained in a legend or instruction. The numbers above the circles are the approximate radius of the planet's orbit around the star in astronomical units. The green bar below the planet at twelve AU indicates that its orbit is in the habitable zone for that star. In this design solid fill means that the planet is terrestrial, a dotted fill indicates a gaseous planet and a wavy fill indicates a planet with a liquid surface. Other fills can be created as needed for other surfaces such as ice, for one. The containing box will be centered on the location of the star in the star chart. If necessary, pages of greater detail of a portion of a map should be provided if several planet bearing stars that are close to one another are to be described. Since the purpose of the maps is to show planet bearing stars primarily, and the coordinates of the star are given in the box, a lot of leeway is available for placement of the boxed information on the pages. Stars without planets can be readily overwritten.

- VI. **End Matter:** The atlas should end with a section for a bibliography, references, and I recommend a pronunciation guide for stars and constellations names in an appendix. The references should be numbered so that they can be applied to the tabular data in the section containing tables.

Section Three. Form of the Atlas

I. **Size :**

Since the atlas will contain star maps on which text must appear, the recommended size is at least 8.5" x 11" size pages. This will allow the freedom to make the maps detailed and include all of the text information intended to be printed. A good example of the type of celestial sphere maps that are suggested would be those in the Norton's Star Atlas for the 1950.0 epoch. It is quite alright and expected for an atlas to be larger than 8.5 x 11 so go as far as you want beyond this size.

II. **Paper:**

Though the type of paper used for the pages is not a critical design element some suggestions will help improve the outcome.

- a. Use paper that is thick and durable enough for surviving a lot of handling of the pages.
- b. Include some glossy pages. Consider this for the maps.

An atlas of this type, if done with care and excellence, will find use in a lot of places. It will probably require new editions yearly for every year into the foreseeable future. Thus the publisher of this atlas is guaranteed a lucrative reading audience for the long term.