Parallax Park - A bilingual, outdoor, interactive family exhibit

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We present a design for Parallax Park, an outdoor, interactive family exhibit for McDonald Observatory that will bring the quest for learning about extra-solar planets and the astronomical distance ladder down to Earth for the more than 100,000 visitors who come to the Observatory each year. The Park will teach visitors the basic principles of astrometry. It will concentrate on distance determination and extrasolar planet detection, and emphasize the advantages of space-based astrometric measurements. Visitors will experience parallax by traveling a path around a representation of the Sun, mimicking Earth's orbit, while viewing representations of stars at various distances and in various directions. Concepts include Cepheids as standard candles, the inverse square law, and motion around a center of mass. The exhibit includes interactive components suitable for children's use. Text labels and printed guides, in English and Spanish, will explain how to use the Park to explore the uses of astrometry in modern science.

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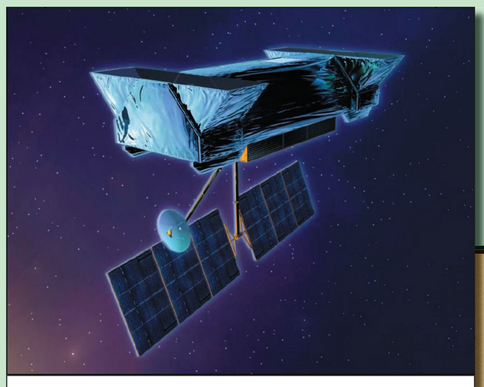
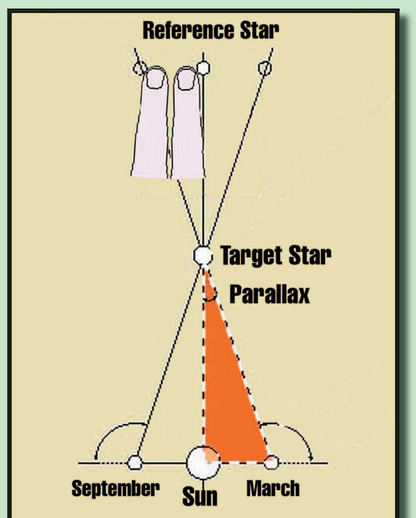
Support from the NASA/JPL SIM PlanetQuest (JPL contract #1227563) is also gratefully acknowledged.

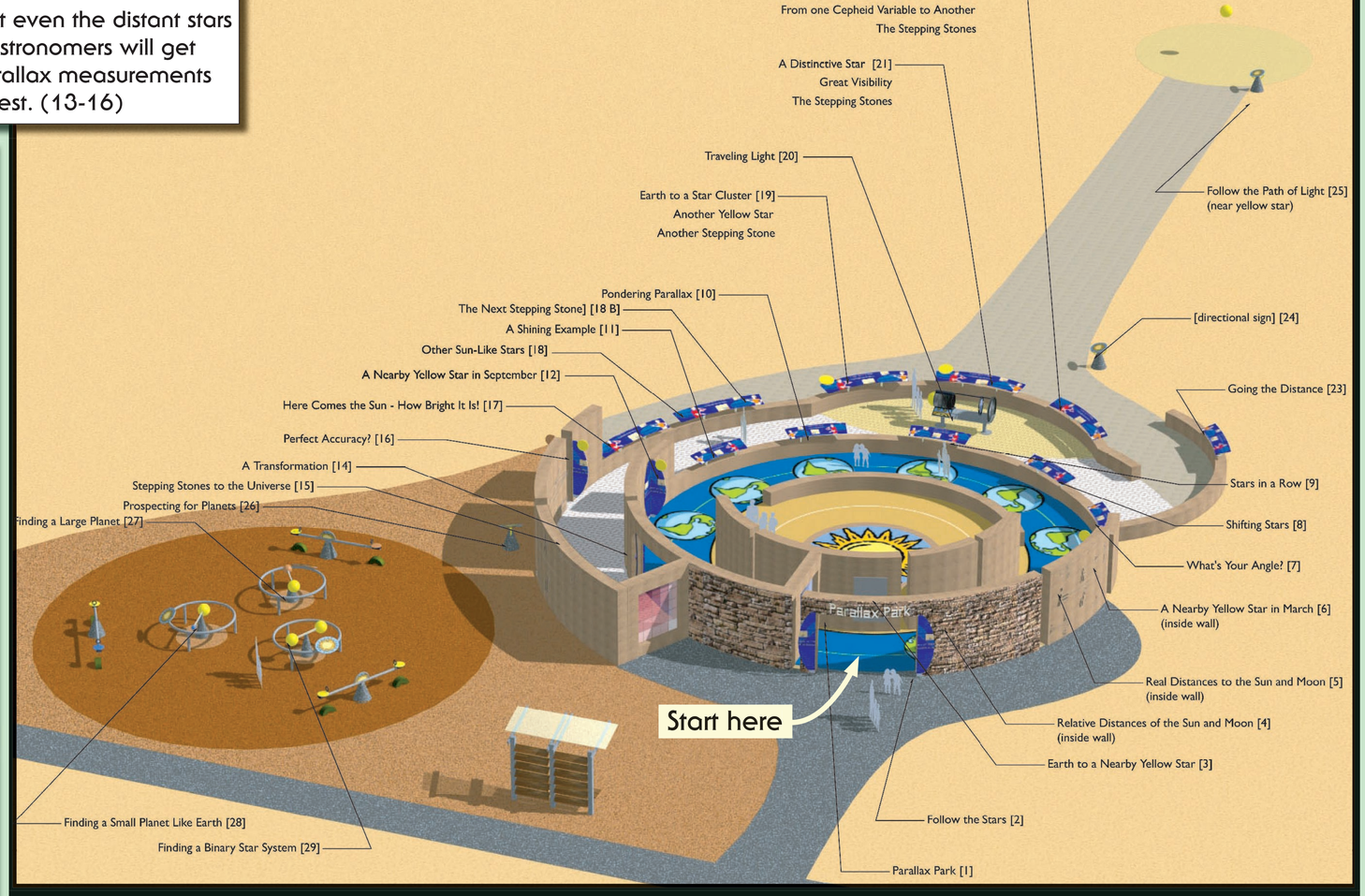


Did you notice that even the distant stars appear to shift? Astronomers will get more accurate parallax measurements with SIM PlanetQuest. (13-16)

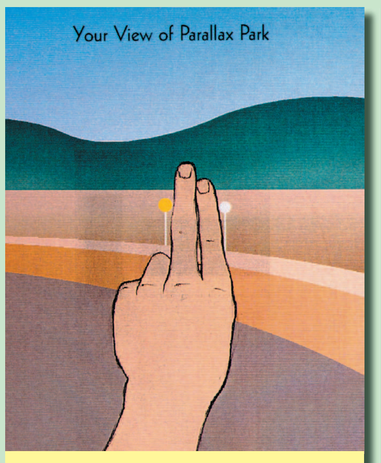


Consider what it means if a star appears to move with respect to its background (8-11), then measure the same star from a different position in Earth's orbit (12).

In a distant "cluster" of stars, you will spot a yellow star like the nearby star (19) and learn about using "standard candles." You can use an interactive exhibit to investigate the inverse square law of light (20). Did you notice that one of the stars seemed to change its brightness? That is a Cepheid variable star (21); it can be used as a standard candle. There is another Cepheid (22) on the ridge road in the distance. Cepheids are visible even in other galaxies.

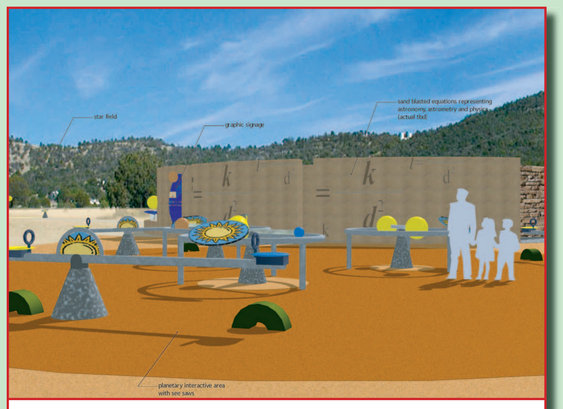


Take a walk with us through Parallax Park.

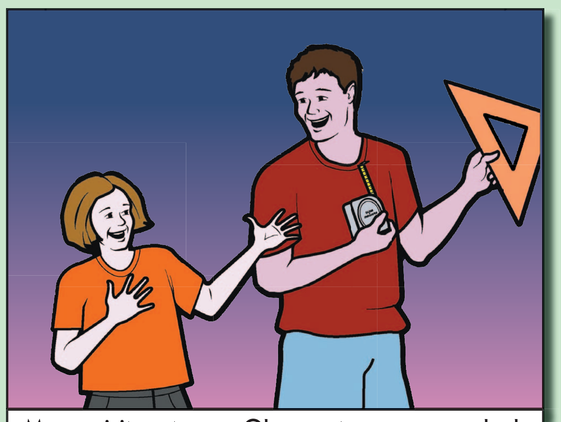


After learning a bit of history, (points 1-5) you can take your first measurement of a "nearby" star in relation to more distant "stars" in the field. (Points 6-7).

Stella and her dad compare their candles (point 17) as "apparent brightness" is introduced. You learn that stars have different characteristics, such as spectra (point 18).



If you wish, you can walk out to the nearby "star" in the field (25), or you can use the interactive exhibits in "Prospecting for Planets" (26-29) to learn about the center of mass of planet-star systems and how astronomers discover extrasolar planets.



Many visitors to our Observatory are puzzled by how astronomers measure distances. Parallax Park uses two guides, young Stella and her father, to discuss the problem and historical milestones.

Parallax Park is the result of over two years of effort from the team to design an interactive outdoor exhibit that will complement the other offerings of the McDonald Observatory Visitor Center. For scale, the outer wall of the inner circle is 60-feet in diameter. All the text will be in English and Spanish (the Spanish illustrated is a rough translation acting as a place-holder for the designer). As conceived, it will have a related K-12 education component with activities on measurement (e.g. cross-staff), variable stars, and size/scale. Some activities are site specific, but most will be available on the Internet for those not traveling to Parallax Park. Funding is not yet available for the construction of Parallax Park at McDonald Observatory. Anyone wishing to build Parallax Park at their site may obtain the design once it is finalized.