National Aeronautics and Space Administration

technology solution

Information Technology and Software

Simplified Night Sky Display System

A portable, inexpensive, lightweight structure displays part of the night sky

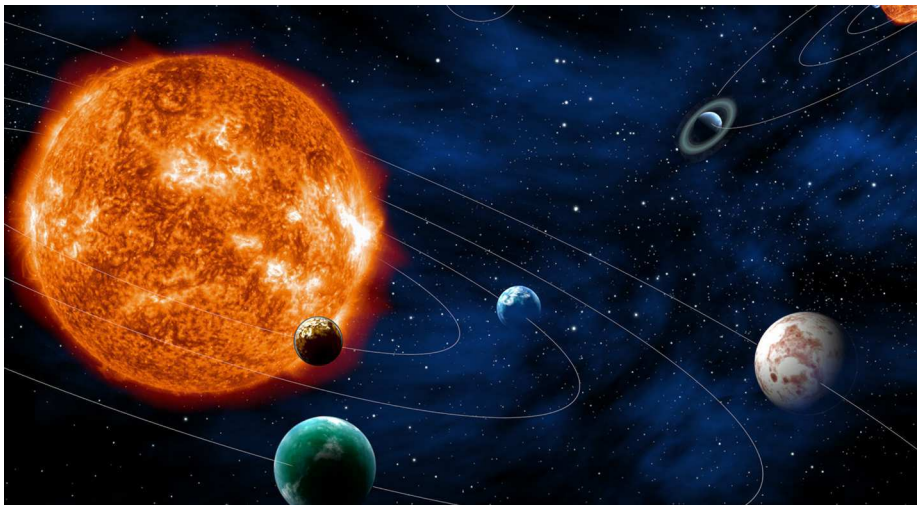
Planetaria, for display of observable objects in the night sky, have become increasingly complex to assemble and to operate as the planetaria designers have sought to capture more and more of the astronomically observable features. This invention is a simple night sky display system that has only a few portable and simple components that can be assembled and/or disassembled easily and quickly, that do not require expensive or extensive maintenance procedures, and that are easily modified to different night sky scenes. This low volume (less than 106 cm3 disassembled), lightweight (less than 20 kg) invention includes at most four components: a computer, a projector, a substantially spherical light-reflecting first surface and mount, and a substantially spherical second surface, having a shape of a sector of a hemisphere and having a second surface geometric center located at the same location as the first surface geometric center.

BENEFITS

- Lightweight
- Portable
- Low volume
- Easily assembled/ disassembled
- Low cost

THE TECHNOLOGY

The display structure includes: (i) a computer having a permanent or temporary memory containing at least one image signal representing one or more images of a portion of a night sky (defined to be a contiguous portion of a celestial sphere that is viewable from a selected position in space, including but not limited to a position on the Earth, at a selected time that may but need not correspond to nighttime at that selected position); (ii) a projector that receives the at least one signal from the computer and forms and projects a visually perceptible image of the portion of the night sky; (iii) a substantially spherical light reflecting first surface, having a first surface geometric center at a selected location, for receiving and reflecting at least a portion of the visually perceptible image from the projector as a reflected image; (iv) a substantially spherical light reflecting second surface, optionally having a shape of a steradial sector of a hemisphere (a fraction of the 2 steradians defined by a hemisphere) and having a second surface geometric center that is substantially the same as the first surface geometric center, for receiving and displaying the reflected visually perceptible image of a portion of the night sky reflected from the first surface; and (v) an interior region between the first and second surfaces.



Planets

APPLICATIONS

The technology has several potential applications:

- Planetarium
- Astronomy education
- Entertainment
- Schools
- Personal education

PUBLICATIONS

Patent No: 7,438,422

More Information

National Aeronautics and Space Administration

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