

# WELCOME to the Uranidrome



## MTSU's Naked-Eye Observatory

The Uranidrome is a unique, user-friendly naked-eye observatory. Its award-winning design makes it an intriguing yet functional campus icon, enabling students (elementary through university) to observe sky motions in a manner similar to Greek astronomers. One can actually use the Uranidrome to determine the earth's rate of rotation, the tilt of its axis, the time of day, or the time for the earth to revolve once around the sun (one year).



Each of the twelve Stonehenge-like columns exhibits a scaled model of a solar system object on one side and the astronomical symbol for that object on the other side, as in the sun column shown above.



Major funding for the Uranidrome came from NASA.

## Daytime Explorations

The 32-foot diameter red circle in the center of the plaza gives a scaled image of the sun to which the other scaled images of the planets can be compared. For example, look at the scaled image of the earth on the earth column. (This is the smaller, higher image with the arrow pointing to it.) Compare the size of the scaled image to the size of your fist (they should be close to the same size). About how many Earth diameters (your fist) would fit across the sun's diameter?



Standing in the middle of the sun's image, look between Earth & Mars columns at the Library or look past the Jupiter column at the football scoreboard. This would be the approximate location of Mercury on the Uranidrome's solar system scale. Venus would be twice that distance, at the Honors building, and Earth 2.5 times. On this scale, where do you think Mars would be?

a. East edge of campus b. softball field

# Nighttime Explorations

Look at the edge of the Jupiter column—you should see a column of color tiles. Note the color you see when you look straight ahead at the tiles. Now stand on that same color tile in the row of tiles in front of the Jupiter column and look through center of the large circle on top of the column. You are looking at the location of the *north celestial pole* in the sky. If it's a clear night you should be looking at a bright star—the *North Star*.



Look again at the North Star and the stars around it. Doing this at different times of night will show that the stars near the North Star (the *circumpolar stars*) all slowly revolve around the North Star as the night goes on. By timing the stars moving around the north star and using the rods pointing outwards from the central circle you can measure the rotation rate of the earth.



More specifically, to measure the rotation rate of the earth, just look through the central circle on top of the Jupiter column while standing on your color tile and measure how long it takes any star near the North Star to pass through the angular spacing of adjacent rods, which are  $15^\circ$  apart. Knowing this time, can you figure out how long it would take the star to revolve all the way around the North Star ( $360^\circ$ )? This is the time for one complete rotation of the earth.



These are but a few of the activities that can be done with the MTSU Uranidrome. For more information or to arrange group guided tours, contact the Department of Physics & Astronomy at (615) 898-2130, or visit the Uranidrome website at [www.mtsu.edu/~uranidrome](http://www.mtsu.edu/~uranidrome).

