

## Foucault Pendulum Notes

The Foucault pendulum is named for the French physicist Jean Foucault. It was designed in 1851 in Paris and was demonstrated for the first time at the world's fair in the Pantheon in Paris. It can be defined as any pendulum consists of a cable or wire or string and a bob. For a pendulum to easily demonstrate the Foucault effect, it should have as long a cable as possible and a heavy symmetrical. Like all pendulums this one loses a bit of energy with each swing due to friction from air currents and vibrations in the cable and other factors. Thus, left to itself the pendulum would swing in shorter and shorter arcs until after a few hours it will decrease almost to zero. To keep the Foucault Pendulum going, one must replace the energy lost with each swing. Giving the pendulum a little "kick" with each swing can do this.

To do this, two iron collars are attached to the cable near the top. There is a doughnut-shaped electromagnet built into the ceiling, and the iron collar swings back and forth inside the hole of the doughnut. When the pendulum cable reaches a particular point in its swing, an electronic device detects it and the magnet is turned on at just the right time to give the collar (and thus the cable and the bob) a little "kick" in the exact direction of its natural swing. This restores the energy lost during the swing and keeps the pendulum from stopping. It has no effect on the direction of the swing.

If you start a Foucault Pendulum swinging in one direction, after a few hours you will notice that it is swinging in a quite different direction. How does this happen? What is moving?

