Turn the handle

This apparatus, held in London's Science Museum, has some significant purpose — or curiosity value — in the history of physics. Can you guess what it is?

Last month: Gyroscope rotor for Gravity Probe B

This is one of the most perfect spheres ever manufactured. Made from fused silica, it is so round that if it were blown up to the size of the Earth, the tallest mountain on its surface would be only 2 m high.

Such precision manufacturing is key to Gravity Probe B — a satellite bearing four spherical spinning gyroscopes that will carry out the most comprehensive test ever of Einstein's general theory of relativity. The mission has been more than 40 years in the planning, but was finally launched in 2004. The sphere shown here is an engineering model for one of its gyroscope rotors, made in about 1992.

According to general relativity, a perfect gyroscope in orbit around the Earth should experience two effects that change its direction of spin: frame dragging, in which a rotating body such as the Earth twists the fabric of spacetime with it as it turns; and the geodetic effect, in which the Earth's mass warps spacetime locally, causing small but measurable changes in the Earth's precession.

No results from Gravity Probe B will be revealed until after the end of the mission, allowing time for thorough calibration and data analysis. The first announcement is currently expected in April 2007.

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