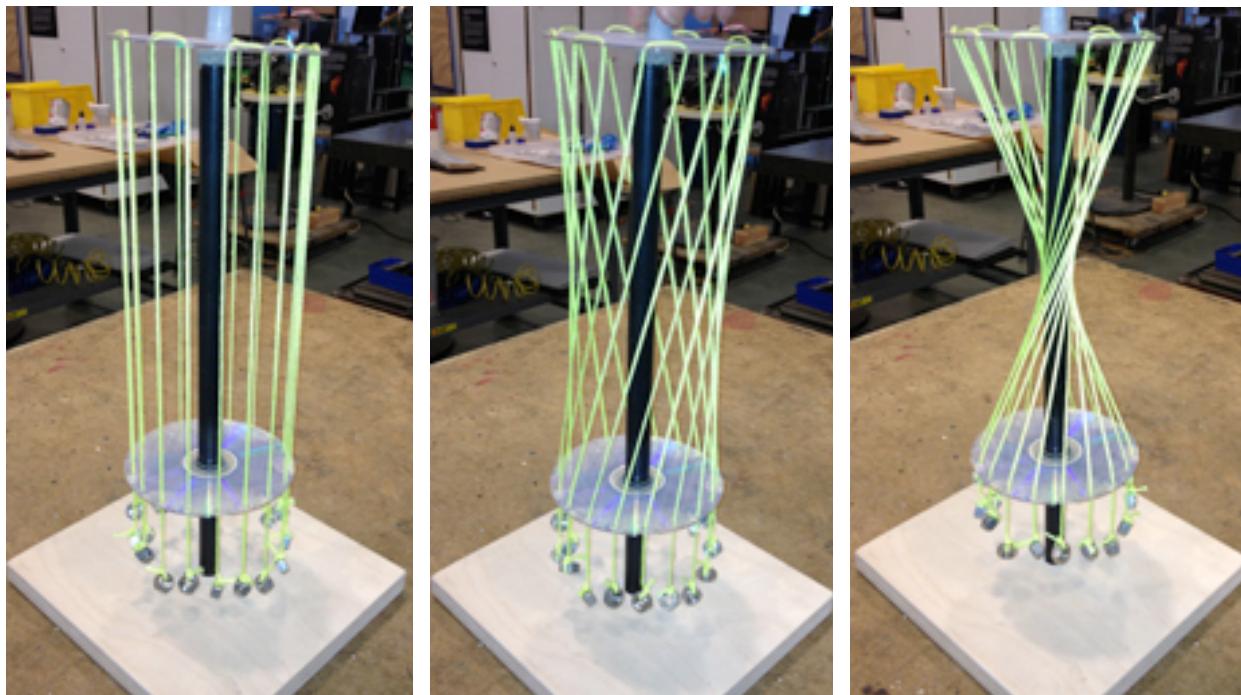# String Hyperboloid

This snack prototype was built for the TI Shop by David Robb, a volunteer Exhibit Developer in the Exploratorium Shop. It is based on his full-size exhibit currently on the Exploratorium floor.

Rather than providing detailed **Materials** and **Assembly** sections, we are leaving the process of getting from the prototype to the final product to you, the builder. In a sense this is putting you a little closer to being a snack developer rather than purely a snack builder. You may find that certain materials used in this prototype are not available in the TI shop, in which case you will have to consider alternate materials, devise workarounds, etc. You should certainly feel free to modify the design, as long as your revised design is doable within the constraints of the TI shop. Feel free to ask shop staff for hints and help if necessary.

What's Going On
Following is an abridged excerpt from one of David Robb's write-ups:
This is a classic string model of a hyperboloid, in which the upper disk rotates, while the lower disk remains fixed. As the upper disk is rotated, the strings transition from the outline of a cylinder to a family of hyperboloids. The shape produced matches what would be calculated from the mathematical equation for hyperboloids with the same dimensional constraints. The hyperboloid has straight lines that exist (diagonally) on a curved surface. In mathematical terminology, such a surface is called a "ruled surface." The individual strings are always straight even when the surface is curved.

String Hyperboloid is an interesting complement to Hyperbolic Slot, which demonstrates the same principle in a different way. Be sure to check both exhibits on the Exploratorium floor.