

Modeling Space-time

To do and notice:

Place the black fabric hoop on the table. Roll one of the spheres across the fabric to the other side.

Did the sphere roll straight across?

Pick up the hoop and place one of the large mass spheres in the center of the fabric. Notice how the sphere warps the fabric. Try to roll another sphere straight across to the other side.

What happens?

What's going on?

Simple rules for space-time:

- The presence of mass warps spacetime.
- Spacetime tells objects how to move.

Orbiting masses are reacting to the shape of spacetime.

It's not the size of the object, but the mass that determines how much spacetime is warped.

LIGO Connection:

LIGO is trying to detect waves or ripples in space-time caused by violent events, such as the collision of two black holes.

Materials:

Embroidery hoop (large)

Fish net hose or spandex material –fabric store

Spheres of different masses and sizes

