Gravity

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Einstein's Mistake (a brief preview)

First, imagine a completely empty universe.

Now add a single sphere of **constant density** (light shading to indicate volume)

The sphere will have a volume $V = \frac{4}{3}\pi r^3$, where r is the radius of the sphere

Now imagine a plane cut through the center of the sphere with two axes in the plane, and one normal to the plane. Each hemisphere will have a volume
$V_h = \frac{1}{2}V = \frac{2}{3}\pi r^3$ The volume of the hemisphere

can be imagined "morphed" into a volume equivalent sphere where $V_e = \frac{4}{3}\pi\left(r_e\right)^3 = \frac{2}{3}\pi r^3$

Now imagine yourself lying on your back at the center of the sphere looking straight up (normal to the sphere, a gradient) and draw an arrow (a radius) from the center normal to the plane to the sphere's surface (i.e., the "vertical" axis).

Fig. 1

The hemisphere includes the universe that you can see with equal density in any direction, but vanishing on the plane on which you are lying (ignoring he thickness of your head…)

If you roll over to look in the other direction, the result will be the same, unless you want to distinguish direction by imagining "1" as looking up and "-1" as looking down; in either case the density will still be positive.