

The Fabric of the Universe and the Gravitational Field

In his General Theory of Relativity, Albert Einstein attributes gravity to the warping of space-time due to the mass of an object. People write about the “fabric of space-time” and “the fabric of the universe” quite often but do not explain what it is. This word “fabric” means framework, structure, and a material that is woven, knitted, or felted. This is a very good word to choose for describing the universe, because we do not know what the universe consists of. Therefore, we accept the word “fabric” as a description because it gives us a feeling of something real with which we can relate.

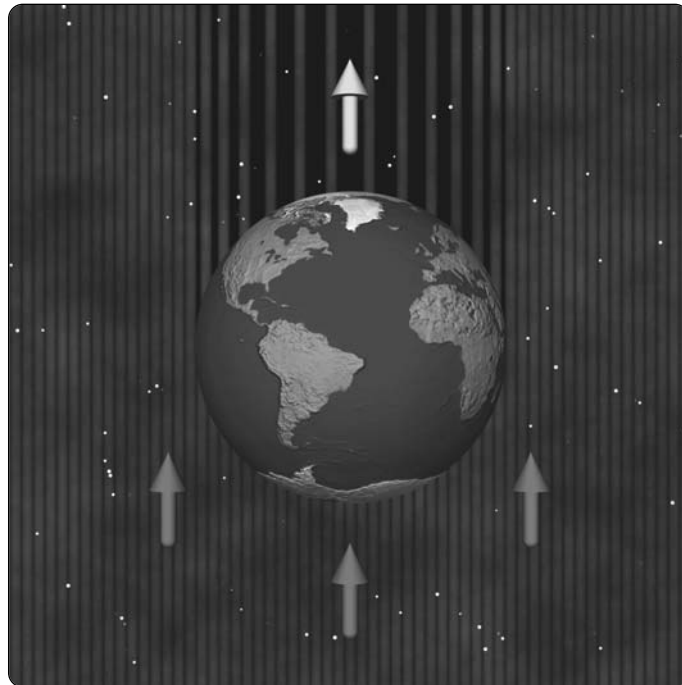
When someone uses the term “fabric of space-time,” most of us understand the idea that this person is trying to convey; however, although most of us understand the idea, what this fabric actually is remains unclear. Scientists have so far been unable to clearly describe it verbally or make an accurate drawing of it. The question remains, however; what is the fabric of space-time, and how does an object’s mass “warp” it?

This theory of origo is a detailed description of an energy that fits the bill for the fabric of space-time. “Space-time,” however, is not the best choice of words for labeling origo, since within the theory we consider time nothing more than the measurement and comparison of the periods of separate events.

The fabric of the universe is a better label for origo. However, the words “space-time” will be used occasionally to help the reader relate to the subject matter.

This description of origo explains how an object's mass affects this "fabric" and causes gravity. It is a description of how mass curves "space-time."

We have reasoned in chapter one that when the universe came into existence, origo was the only thing that came into existence; therefore, the universe and everything within it must be made of origo. Origo also must be the source of all energy of the universe and, therefore, the source of the force of gravity.



Although origo can deviate from a straight-line path when forced to do so, it always tends to move in straight lines. Because of this, wherever it loses energy to an energy structure such as a planet, the energy level or outward force of origo on the opposite side, as origo exits the structure, is lower than

that of the energy level or inward force of origo first approaching the structure.

The difference in energy level or force between the inward and outward forces is an amount equal to that lost to the energy structure.

Because the inward force converges on the planet and the outward force radiates away from it, this region of directional energy imbalance will be nearly spherical, with the planet or other energy structure at its center. Any object within this region will experience acceleration toward the planet.

The acceleration that an object experiences within this region is equivalent to the imbalance between the inward and the outward forces, which is proportional to the mass of the bodies that are causing the imbalance.

The regions of unbalanced forces that surround all energy structures are gravitational fields; this spherical energy imbalance around each energy structure is the "curvature of space-time."

In order to relate these ideas to modern ideas of gravity, we can consider origo to be "space-time," and whenever it is diverted from its straight-line path, or otherwise in a state of imbalance, we can consider it to be warped.

The Energy Acting upon an Object Within and Without a Gravitational Field

Why acceleration due to gravity diminishes the further an object is from another is what we will consider in this section.

The inward force acting upon an object, from the direction