

# How Jesus holds the Universe together

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God tells us in His word in Colossians 1:17 “And He is before all things, and in Him all things hold together.” The apostle Paul, the writer of this epistle is of course referring to Jesus Christ.

Modern science has determined at least to some degree how Jesus does this, even though of course secular science does not credit Jesus with this. Many of you may remember from your science classes in school, that atoms are made out of protons, neutrons and electrons. You may also recall that the electrons orbit the atomic nucleus, which is composed of protons and in all cases except hydrogen two or more neutrons. Comparatively few people know that when an electron moves in a curved, that is non-straight path, it continuously loses energy in the form of radiation, known as synchrotron radiation. Synchrotron radiation was named after its discovery in a General Electric synchrotron accelerator built in 1946. In such an accelerator, a powerful magnet causes the electrons to move in a spiral path. As they do so, they lose energy which can be detected easily. When electrons move in a straight line, such as in the two-mile Stanford Linear Accelerator for example, they do not lose energy until they are deflected from their straight path by powerful magnets or hit another atom.

The electrons whizzing around the nucleus of atoms, are obviously not moving in a straight line, so therefore they should continuously lose energy, until they crash

into the nucleus. This collision would result in the destruction of the atom. You may remember from your science classes that the nucleus of every atom has a positive charge and electrons buzzing around the nucleus have a negative charge. These charges balance exactly and therefore the atom as a whole is electrically neutral. You probably also remember that opposite charges attract and like charges repel. So why are the negatively charged electrons not attracted to the positively charged nucleus until they crash into it?

Thankfully the atomic crash has not happened yet, since the universe and all of its atoms is still very much intact. There are only two possible reasons that this could be so. At first, some scientists thought that perhaps electrons in orbit around the nucleus are exempt from the law that says that they should lose energy when not traveling in a straight line. Since this theory would be a violation of a fundamental physical law, it was called into question by many other scientists. For a long time the question of what held atoms together was therefore unanswered.

Normally, all atoms are constantly moving around in seemingly random motions. The higher the temperature the faster the atoms move. Therefore, it was thought possible to stop the movement of atoms by simply cooling them until they stop moving. The temperature at which this occurs is known as absolute zero. This temperature is known as 0° Kelvin, which is the same as -273°C or -

454°F. However, when the experiments were done that achieved this low temperature within a few thousandths of a °K, it was found that there was still some residual energy left. This is also true when virtually all atoms are removed from a hollow container. This residual energy has been named “**zero point energy**”.

Because in our everyday world, we can only use **differences** in energy, this zero point energy is not available to us, even though it is mind-bogglingly great. An analogy would be our own Earth's atmosphere. We do not notice the enormous pressure of our atmosphere of 14.7 pounds on every square inch of our body, because it is equal in all directions, pushing in and out at the same time. However, if the air is pumped out of a container, the full weight of 14.7 pounds will push on the outside of that container's every square inch. If the container is not strong enough it will simply collapse. The pressure at the bottom of the ocean is thousands of times greater than this, yet there are creatures living under this tremendous pressure, because the pressure is equal in all directions.

In the same way, we do not notice this astronomically large zero point energy, because it is equal around us in all directions. It has been estimated that the energy contained in one cubic centimeter of so-called empty space, is greater than all the energy the sun has radiated in its entire existence. It is the tiny fluctuations of this enormous energy, that impart just the right amount of energy to every electron in the universe, so that it exactly balances the energy loss each electron experiences

because of its nonlinear motion around the nucleus of each atom.

This unfathomable energy was put into the universe by the powerful word of Jesus Christ, by whom all things were created. Scientists have labeled this energetic creation event "The Big Bang". God tells us repeatedly throughout Scripture that he **stretched** out the heavens. Scientists have lots of evidence that indeed the universe has expanded from a tiny point to its present size.

It was not only put there originally, but Jesus actively maintains this energy by means of his word. One day, this tremendous power of God will be shut off, according to 2 Peter 3:10. At that time every atom and therefore all matter in the universe will disappear in a flash of unimaginable heat and noise.

Those of us that have availed themselves of the salvation made available by Jesus Christ and his death on the cross, are looking forward to a new heaven and a new earth as promised in Revelation 21:1.