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Thermodynamic Field Theory

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ABSTRACT

The theory proposed here presents a straightforward concept that challenges the conventional understanding of heat. The current definition of heat describes it as the transfer of kinetic energy between the particles composing substances or from an energy source to an object. In other words, when we pour coffee into a coffee mug and the mug gets hot, it is allegedly because the particles in the coffee transfer their kinetic energy to the particles in the mug. This alleged transfer of kinetic energy happens at a microscopic scale so far removed from our capacity to observe that we can only analyse it by its statistical effects; but until recent years, there has been no experiment that could confirm or deny the validity of this conjecture. According to this classical model, heat should in principle be completely independent from gravity, but based on this assumption, the corrections of general relativity predict an increase in gravity as the temperature of an object increases.

The core assertion of this theory is that heat is not adequately defined by the conventional notion; instead, it is a relativistic effect altering spacetime itself. According to this proposal, the mechanical changes in the motion of microscopic particles associated with temperature fluctuations really correspond to spacetime alterations. This implies that changes in heat are synonymous with alterations in spacetime dimensions. Therefore, when temperature increases and substances expand, we should observe the opposite of what is predicted by general relativity, we should see an increase in the rates of time and space, akin to a decrease in gravity.

Conversely, heightened coldness implies decreased space and a dilation in time rate. This seemingly counterintuitive relationship between temperature and gravity may challenge conventional understanding, but unlike the current definition, this conjecture is supported by experimental evidence that will be presented on the experiment section.

Introduction

According to the classical definition, energy is the capacity an object has to do work, to move another object; but what actually does the work is not energy, but the force an object exerts on another. From the classical perspective, energy was a capacity attributed to mass-bearing objects and it had no meaning without them; it was a bookkeeping mechanism to calculate work and force. It wasn't until Max Planck used Boltzmann's hypothesis that we started to see energy as something capable of moving mass-bearing objects all by itself, contradicting the very definition of what energy was at the moment. Planck came up with Boltzmann's constant and the quantization of energy to explain the black body radiation problem. But he didn't understand it; he didn't even like it; he just noticed that it worked.

One of the biggest conundrums in modern physics is the medium problem for radiation. Waves are by definition a perturbation in a medium, and this perturbation is what enables energy to be transferred, but in the case of light and other forms of radiation, we don't have a medium to be perturbed. How can this alleged perturbation in nothingness transfer energy? How can a massless photon displace a mass-bearing electron? We don't have the answer to these questions; we just sweep them under the rug. But if we want to further integrate relativity and quantum mechanics, we may need to understand this fundamental problem.

I previously proposed that heat is a change in spacetime itself; therefore, the change in the density of spacetime is what makes particles change their perceived velocity and what makes substances contract or expand as temperature changes. There's no transfer of energy in this process; there's only a change in spacetime and inertial frames. From this perspective, there's no such thing as quantization of energy. What quantum mechanics currently says is that the nothingness of space can transmit this disembodied capacity called energy, which isn't really something, and move mass bearing electrons. I disagree; I believe that what we see in the black body radiation experiment is not a quantization of energy; it's a quantization of spacetime. This is why a massless photon is able to move a mass-bearing electron. The photon isn't quantized energy traveling through empty space; it is a quantized chunk of swell heat spacetime, and when it is absorbed by the atom, the spacetime around the nucleus changes and the electron upgrades its position within the so called, energy levels. The electron doesn't go anywhere; the spacetime where it exists changes. The electron only follows the curvature of spacetime, or if you prefer, it vibrates in a different heat spacetime modulation. This may be why the prediction of general relativity fails in the experiment I will present as supporting evidence. The particles composing a substance may not be moving all that much when the substance increases in temperature; what's really changing is the heat-spacetime density they inhabit. As the local gravitational field of a substance decreases, the particles composing the substance will indeed accelerate, and the substance will expand; but when we understand this acceleration and expansion as a relativistic phenomenon and not merely a mechanical one, then Einstein's prediction of gravitational increase becomes obsolete, as you will see in the following experiment.

Experiment

In 2018, a group of Chinese scientists published an article in the International Journal of Physics titled "Experiment on the Relationship between Gravity and Temperature." In this experiment, they reach the following conclusion [1]:

"In this experiment, a number model of gravitation and temperature is established by using Cavendish twist balance to test the gravity of shot at different temperature, the relationship between gravity and temperature is analysed quantitatively, and it is concluded that, the higher the temperature of the object, the smaller the absolute value of gravity, and vice versa."

These results clearly confirm the prediction I make in this proposition while contradicting the current model of heat and one of the predictions of general relativity.

You can read the complete article at: http://pubs.sciepub.com/ijp/6/4/1/index.html

Discussion

Implications for Einstein's Equation, E=mc2

I believe it is only from this perspective that Einstein's paradigmatic equation $E=mc^2$ can make any sense. Einstein himself was notoriously unhappy with this expression, and who could blame him? By current standards, what this equation is saying is: Energy, or in other words, this hocus-pocus thing that moves electrons in a way we don't really understand, is equal to matter times this really big constant. From the point of view of this proposition, there's no energy, only different levels of heat spacetime, and sometimes, motion can emerge from the interactions between these fields and matter. For this reason, Einstein's equation should be restated in terms of heat, or as $Q=mc^2$, where Q is defined as the heat-spacetime density variable. The reason I think this new expression makes a lot more sense is that I believe matter is also heat-spacetime itself, but in this case, it is entangled heat-spacetime. It is a heat spacetime density trapped in a different heat-spacetime density. When an atomic bomb goes off, what really happens is that the spacetime entangled as matter gets released and blows everything up; matter has not been transformed into energy, it's just been disentangled. This is why what we currently understand as energy can be equivalent to matter: because they are actually the same thing. I know I may be taking a few licenses and making a conceptual leap, but if you think about it, this is the only way in which the two sides of this equation can be equivalent; it is the only way in which this equation makes any sense. Furthermore, the reformulation of this equation could be the key to the unification of gravity, or what I call low heat-spacetime density, and electromagnetism. The speed of light, c, can also be expressed as $c=1/\sqrt{(\varepsilon_0\mu_0)}$; therefore, this new version of Einstein's equation can be restated as $Q=m/\varepsilon_0\mu_0$ or as $\varepsilon_0\mu_0=m/Q$.

This is significant because in this new expression, we can find a relation between the permittivity and permeability of space constants and the mass and heat spacetime variables. This, I believe, is the link between gravity and electromagnetism; if we can understand how EM changes with respect to temperature, we may be able to finally unify these two fields.

Cosmological Implications

If gravity is in fact coldness or lack of heat and an increase in temperature implies an increase in spacetime, then you may wonder: How can stars be so hot and have so much gravity at the same time? I believe stars are the stage of a big heat spacetime conflict; they have tremendous gravity-coldness and at the same time are incredibly hot. I believe the interaction between these very high and low heat spacetime density fields is what we understand as radiation. This is why both light and gravity seem to propagate at the same rate. Light and other forms of radiation are not a perturbation in the nothingness of space or in some mysterious quantum field, as is currently accepted. Light is a perturbation in a high heat-spacetime density by a very low heat-spacetime density; light is a perturbation in spacetime by spacetime itself.

Another conundrum we find in modern physics is the inconsistency of galactic rotation with physical laws. The density of stars and therefore mass near the centre of galaxies is much greater than the density at the periphery. Therefore, the stars near the centre should be orbiting the central axis at a faster rate than the stars on the edge of the galaxy, but this is not the case. We have observed that galaxies rotate as a uniform plate; therefore, we have either a very serious case of unaccounted-for gravity or a conceptual inconsistency. To justify this missing gravity, many astronomers believe in the existence of dark matter, since the gravity of this hypothetical material would justify this inconsistency. But this proposition entails an even greater problem: Even though dark matter should be present and observable everywhere, when we look for this elusive substance, we can't find any of it, not even a drop.

If this proposition is correct and heat is a change in spacetime itself, then this problem immediately disappears because the missing gravity is just coldness or a lack of heat. As we get further away from the centre of the galaxy and from any star, it gets increasingly cold. Therefore, according to this proposition, gravity should increase as we approach the edge of the galaxy. For this reason, another way to test this hypothesis would be to replicate the experiment I'm referencing here with better accuracy and a greater temperature range. We can use the change in gravity with respect to temperature measured in the experiment as a baseline. If these results are correct or somewhat correct, then the change in temperature and therefore gravity throughout the galaxy should match the gravity attributed to dark matter.

Implications for String Theory

The line of reasoning derived from the previously proposed modification of Einstein's equation has led me to be more open to the ideas in string theory. If strings are the fundamental building blocks of nature, then what are they made of? What material can allow them to have all the properties attributed to them? And if they are composed of another material, can they still be the fundamental building blocks of nature? If, on the other hand, we consider these strings as ringlike spacetime bubbles or a tiny wormhole trapped in a different spacetime density, then we could have all the properties attributed to the strings, and the fundamental material problem would be solved. Strings can be the fundamental building blocks of nature because they are made of the most fundamental thing in the Universe, spacetime itself. I'm by no means an expert on this matter, and I still find the extra dimensions part hard to assimilate, but I believe matter at its very essence could be something like what string theorists are proposing if we consider spacetime bubbles. There's no material to be concerned with, only heat-spacetime densities trapped as bubbles in other heat-spacetime densities. As a side note, and with regards to the multiple dimensions problem in string theory, instead of having so many dimensions, could it be possible to have fractal dimensions? Could all these extra dimensions be expressed as different ratios of the four dimensions we already have? I don't know if this makes any mathematical sense; it's just an idea I've been brainstorming, and I think it could be useful to our understanding of this field.

Note to the Reader

For many years, I've been knock-knock-knocking on science's door, with very little response. I have sent this theory to tens of thousands of scientists, but in spite of the experimental evidence, no one seems to take this proposition seriously. One of the few responses I've got was from a Nobel laureate in physics. He simply argued that the results of the experiment I was referencing could not be right because they stand against everything we know about modern physics. I respectfully responded that it was unlikely that most of the trials were consistently wrong. For this to happen, the scientists who performed the experiment must have done a terrible job, or they cheated. I also told him that the fact that the experiment contradicted all we know about modern physics shouldn't be a parameter we should use to assess and dismiss experimental results. I believe science should be most concerned with the experiments that don't fit our expectations instead of sweeping the results under the rug. The moment we refuse to consider empirical evidence is the moment we are no different from Urban VIII. Unfortunately, I haven't heard back from him.

I'm not asking for anything too special; I don't want anyone to resonate with me or to feel the "good vibrations" of my ideas. All I want the scientific community to do is to follow the principles they claim to follow, to follow the scientific method. I think it may be a good idea to replicate the experiment I'm referencing, not only to prove my point, but because it is the honest, scientific, and sensible thing to do.

I know what I'm proposing here may seem preposterous and too far out of the box, but string theory, relativity, multiple universes, dark matter, 11-dimensional space, Hawking Radiation, holographic universes—these are all, one way or another, preposterous ideas, and some even seem to be correct. Science usually demands painful sacrifices in payment for paradigm shifts. Einstein sacrificed the ideas of absolute time and space by unifying these two concepts. This unification, as radical as it seemed at the time, was able to explain reality at a much deeper level. What I'm doing here is nothing different: I'm sacrificing the idea of energy and the current model of heat in order to unify the concepts of heat and spacetime and hopefully create a more integral and intelligible model of the Universe.

This is a very simple idea; I believe I have followed its logical implications; it seems to be consistent with experimental evidence, and it could explain a lot of what so far has remained a mystery. For all these reasons, I humbly believe this is a proposition worth pursuing. What I'm saying may seem disturbingly simplistic and completely counterintuitive, but we can often get entangled in our own complexities and presuppositions. Sometimes what we believe we know is precisely what keeps us from realizing that the answers we seek are hiding in plain sight in the most obvious contradictions; all we need is the courage to face them and the guts to engage them. I strongly believe the Universe is in essence a very simple and intelligible entity; sometimes we just don't get it because it tends to have a very wicked sense of humor.

References

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