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Thank the quantum realm for *nothing* ever entering into black holes

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While the quantum realm seems hidden, it can also reach examples of infinite energy, especially when a part of space is roughly removed until it disappears, possibly forever. Since it follows that *Nothing* can enter a region where the space is missing, the quantum realm, as seen now in affine quantization, will automatically come to help everything else by creating colossal "quantum walls" that will ensure that everything stays out of all black holes. In this paper, we show that the expanded quantum realm allows *Nothing* to ever fall into a black hole.

Keywords: Black hole; affine quantization; field theory.

1. Introduction

While humanity believes that the quantum realm is very weak due to a very small $\hbar$-factor, they do not appreciate that it can be immensely strong because, effectively, selected $\hbar$-terms can reach an infinite energy.

2. A Brief Examination of the Current Understanding of Black Holes

The current understanding of black holes is naturally from a classical viewpoint, and, to a degree, also relies on canonical quantization. In this case, it requires that the physical space exists everywhere, e.g. $-\infty < q < \infty$. Black holes have then,

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essentially, found that colossal quantities of trash have piled up, which are so huge that they can even develop very strong attractions of gravity.

3. A New and Very Different Analysis

3.1. *A new quantization procedure*

First of all, we introduce a new, and different, formulation of quantization procedures, which is known as Affine Quantization. It has the very important property that it can only exist if there are *missing parts of space*, and that is shown by incomplete regions that still remain, e.g. $0 < q$, $0 < |q|$, $|q| < b$, and especially $|q| > b > 0$, since the last example will be important for this paper, and which could offer a very great distinction between this new understanding of black holes and the conventional understanding of black holes. This new quantization procedure has proven itself very well in dealing with examples that only have an incomplete space.

Now we will examine what could look like regions of missing space that might lead us to investigate and see if that might be black holes.

3.2. *A toy model that is VERY relevant*

The classical Hamiltonian for the half-harmonic oscillator is $H = (p^2 + q^2)/2$, but it has been so-named because we have chosen that only $q > 0$ remains. In that case, and using affine quantization, we find that the quantum Hamiltonian is $\mathcal{H} = (P^2 + (3/4)\hbar^2/Q^2 + Q^2)/2$, with $Q > 0$. For this example, the eigenvalues are $E'_n = 2\hbar(n + 1)$ for $n = 0, 1, 2, \ldots$, while the eigenvalues for the well-known full-harmonic oscillator are $E_n = \hbar(n + 1/2)$. Evidently, in each case, the eigenvalues are equally spaced, and the number 2 "has just played an important role".[1]

Since the $\hbar$-term can become very, very, strong close to $q = 0$, it would be useful to introduce a new way of spelling the word classical, namely by classicAL, as a *signal* that all $\hbar$-terms have been included along with the standard classical elements used for standard classical equations. Specifically, we would now like to use $H = (p^2 + (3/4)\hbar^2/q^2 + q^2)/2$, because now $q > 0$. In fact, that would help signal that its classical particles must bounce backward at the point $q = 0$. Since each of these potential-like $\hbar$-terms can even reach infinity, it seems only reasonable that such $\hbar$-terms should appear together with standard polynomials in the same kind of equations. After all, you would readily accept $H = (p^2 + \gamma 10^{-50} q^{-50} + q^2)/2$ into the classical Hamiltonian family, so why not let suitable $\hbar$-terms that *could, should, and would*, act as very useful potentials since they can reach infinity. In addition, it is also noteworthy that when affine quantization immediately finds a new missing space it automatically introduces a new "quantum wall" to keep everything away from that missing space.

In addition, if the remaining spatial space, $q > 0$, was partially increased, by setting it now as $(q + b) > 0$, with $b > 0$, then the new eigenvalues would still be equally spaced, and finally, when $b \to \infty$, we would correctly obtain all of the properties of its canonical quantization.[2] Effectively, all affine expressions, can eventually become a related canonical formulation just by restoring all of the missing space.

Returning to our initial expressions, observe that $q > 0$, which is our retained space, and refusing from entering our missing space, which, for this example, is $q \leq 0$, even having a classical Hamiltonian, such as $H = (p^2 + q^2)/2$, when $q \leq 0$ is no longer prohibited. It would seem to make more useful physics by adding the $\hbar$-term that was "smart enough" to become this kind of classicAL Hamiltonian, e.g. $H = (p^2 + (3/4)\hbar^2/q^2 + q^2)/2$.

Surprisingly, our study of black holes will not be so very different from the topics of this section.

Remember that $\hbar^2$ is NOT ZERO, and that affine quantization can rigorously, and correctly, solve a very different set of problems than those of canonical quantization: specifically, affine quantization has been designed to solve ALL examples with ANY kind of missing space.

3.3. *Exploiting missing parts of space*

We shall propose that black holes may be examined through a specific, and correct, article, namely The Particle in a Box Warrants Examination.[3] All that would be necessary, effectively, is to use two, very similar, Hamiltonians except that the first one is active inside the box, while the second one is active outside the box. In order to deal with the one being outside, it will be necessary to add additional potentials that can handle the complete outside space. Effectively, the second example space just has a finite section removed from the complete space. The Hamiltonians for the "particle in a box", have been correctly created in the paper just mentioned.[a]

It is physically correct that the $\hbar$-terms should now also belong to the classicAL family, which has a "new spelling and meaning", that signals that this word is now being used to include all $\hbar$-terms as well, especially because all of those $\hbar$-terms can already reach infinity, and should be allowed alongside the conventional potential terms in standard classical Hamiltonian equations. Now, both the classicAL and quantum Hamiltonians have included all $\hbar$-terms, such as in this example, first offered in the new classicAL form,

$$H = \frac{1}{2}[p^2/m + \hbar^2(2q^2 + b^2)/(q^2 - b^2)^2 + mq^2] + V(q), \tag{3.1}$$

and second, and using the standard Schrödinger formulation, leads to

$$\mathcal{H} = \frac{1}{2}[P^2/m + \hbar^2(2q^2 + b^2)/(q^2 - b^2)^2 + mq^2] + V(q). \tag{3.2}$$

[a] The details of the $\hbar$-terms have been taken from a special article, and while they can reach the 3/4 story extremely close to each end, the analysis in between the two ends requires special attention from page 3 in Ref. 4.

To make this example even more physical-like, we can just let $b \to b(x,t)$ in those two equations. Also, 2 or 3 spatial dimensions can be accepted, simply by changing $p \to \vec{p}$ and $q \to \vec{q}$ as well as $P \to \vec{P}$ and $Q \to \vec{Q}$.[b]

The authors believe that strong $\hbar$-terms definitely belong in classicAL physics, and are included in the traditional classical equations that would be suitable, because terms, such as $2\hbar^2/q^2$, which can reach infinity, should be serving as standard potentials, and certainly such terms would deserve to be added to appropriate classicAL equations.

4. Summary and Outlook

The authors also believe that space can be broken which leads to regions that are completely absent of any space. Of course, that would have taken huge physical efforts, but when enough trash has been closely assembled, it is very likely that it could easily destroy the local space through fantastic weight, giant explosions, and any other brutal crushing.

The toy model in this paper has shown that after suddenly removing a specific portion of space, the quantum realm will *instantly* create a "quantum wall" in order to keep everything out of the new missing space.

Now the new, and very useful, affine quantization procedures will never let anything fall into such a black hole. In addition, it is noteworthy that you should realize the ability to stop anything from entering a black hole because the new quantization process will keep everything out of any black hole.

You may be assured that canonical quantization may never be suitable to deal with black holes. Fortunately, this new, and very suitable, affine quantization, and its procedures, can definitely deal with incomplete space, and AQ is now available to have it to be fully explained. If you wish to have a better understanding of affine quantization, you could examine a beginner's article,[5] or for more experienced people, choose article.[6]

And finally, black holes are dealing with giant fires that are held surrounding the black hole itself. It is proposed now that a "quantum wall" will hold trash away from entering into the black hole, and, like any other potential would do, it will glow from the burning trash, which has piled up against the "quantum wall" surrounding closely just outside of the black hole. The conventional view may not have as good an understanding of the "ring of fire" surrounding a black hole as does that of the quantum realm formulation.

The authors of this paper are convinced that the standard description of black holes is very likely incorrect, and since Nature has definitely shown us how to make a

[b] Although we will not need it in this article, but if the missing space is just a *single point* in space, like just removing $q = 0$, that would still require 'quantum walls', as seen in equations (1) and (2), the factor b can be reduced to zero indicating that removing just a single point from space will still create 'quantum walls'. Tnat final expression could represent the birth (or death) of a black hole.

"quantum wall", the contents of this paper should appear more believable than those of the standard understanding of black holes.

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Data Availability

No additional data were used in this study.

Conflicts of Interest

The authors have no conflicts to disclose.

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