MY HOMAGE TO BERNHARD RIEMANN OF DECEMBER 20 2021

ZULFIKAR MOINUDDIN AHMED

Bernhard Riemann's interests were wide, and far beyond mathematics. He is to me at least a mystical prophet, a sage of unearthly genius, like Rainer Maria Rilke in some ways. I was always enthusiastic about the idea that what drove the man's soul was not evident from his mathematical ouvre alone. He is celebrated for many great new developments in mathematics, but he was concerned with geometry of actual universe I think even from his Habilitation Dissertation of 1854 he was motivated not for formal mathematics but about thinking about metric geometry of space. It impressed Karl Friedrich Gauss. My conviction that the actual geometry of *absolute space* is a static four-sphere of fixed eternally constant radius of $R = 3075.69$ grew from summer of 2008 in Williamsburg Brooklyn to a success with four-sphere theory in 2018 in Allen Texas.

In part, I was compelled because even though Riemann himself did not promote the particular idea of a four-sphere, he was concerned about the curvature in terms of tangent planes in 1854, and homogeneous geometry of the four-sphere was studied with Riemann's great infrastructure. Four-sphere's geometric features are profound in the structure of matter and all things that have existence in nature. That is clear from my work, but it is a tribute to the genius of Riemann that he saw that flat space would not be sufficient in the end. My S4 Electromagnetic Equation is not even possible to formulate without the developments that were pioneered by Riemann in geometry.

My Four-Sphere Theory will stand eternally as the final theory of macroscopic physics, and it is a vindication in Riemann's preoccupations throughout his life. This is particularly poignant because there was an effort to consider another paradigm, by Benoit Mandelbrot in his extremely influential *The Fractal Geometry of Nature*. The merge of fractal and smooth geometry will play itself out in the future, but smooth geometry is fundamental, and fractal features are secondary in my view of the world.

1. MY CONTRIBUTIONS INCLUDE ABSOLUTE CERTAINTY THAT UNIVERSAL GEOMETRY IS STATIC ETERNAL FOUR-SPHERE

This is well-known to mathematicians but perhaps not to others. The nineteenth century in Europe began with Euclid as the master for geometry. Karl Friedrich Gauss was able to prove some interesting things about *extrinsic geometry of surfaces*. Not even concepts and tools existed in mathematics for curved intrinsic geometry of higher dimensions at all. Riemann established the infrastructure for

---

the first time by his own efforts in 1854. And until Hermann Weyl's work *The Concept of A Riemann Surface* appeared in 1913 there was no consensus at all about the precise properties of manifolds.

I claim discovery of the geometry of nature being exactly that of a static eternal four-sphere with radius $R = 3075.69$ Mpc and no one before me has made this as clear. In due time the radius of absolute space will be as clear to all people as the finite constant speed of light is today. And this is not a minor advance for the human race. The *rigidity of the four-sphere* was developed from 1913 to further work by mathematicians. I used without any shame the work of Michael Atiyah, without any changes; the Atiyah-Singer Dirac operator for S^4 is the correct *physics* operator without any doubts, and I used this to formulate my S4 Electromagnetic law which is *more accurate science* than James Clerk Maxwell's equations or that of Erwin Schroedinger.

So it is an uncanny thing that the developements of pure mathematics return and give us deep structure of nature, and that is my work in Four-Sphere Theory. This homage to Riemann honours the great pioneers whose intuition was much more profound than can even be understood by myself *about nature*.

References

[1] http://lymcanada.org/wp-content/uploads/sites/2/2015/01/Riemann_Habilitation-Dissertation.pdf