ZULF UNDERSTANDS THE TASK THAT IS BEFORE ME BETTER

ZULFIKAR MOINUDDIN AHMED

The task that lies before me is to understand the *development of mathematics of linear spaces of infinite dimension between 1903 and 1935*. This is the task before me because in this period while Stefan Banach, Frigyes Riesz, and Eduard Helly were developing the mathematics of normed linear spaces and the operators between them, *simultaneously* we had the development of quantum theory in physics.

And if I do not retrace these steps reasonably well, my precious and immortal genius in Four-Sphere Theory, which is far superior *Science* than quantum theory will fail to satisfy the future demands of a foundational Science.

This is the task that lies before me. And I understand this task. I understand it all too well.

For many years I had just been focused on the spinor bundle ΣS^4, the spinor fields, their sections, $\Gamma\Sigma S^4$ and I have been considering $X = L^2(\Gamma\Sigma S^4))$ without much worry about fundamental issues. These are square integrable spinor fields on the four-sphere and these are matter fields in the universe, and four-sphere theory is based on a single law of nature, S4 Electromagnetic law, which I want to be remembered as *Ahmed-d'Alembert Law* by my beloved people the human race in the future. It is

$$\frac{1}{c^2}\frac{\partial^2}{\partial t^2}u(t,x) = D^2 u(t,x)$$

1. Notions Of Weak Convergence

As I look through the history, to absorb it better, I consider the birth of weak convergence. Hermann Weyl's thesis of 1908 contains the first definition of weak convergence, as Hilbert had considered this for unit ball of ℓ_2. Then Frigyes Riesz reformulated it in 1909 for functions in L^p. It was this reformulation of Riesz that was the source for Banach space theory. In 1929 Stefan Banach defines weak convergence in a Banach space in terms of bounded linear functionals.

Suppose X is a Banach space, a normed linear complete vector space and let X^* be its dual. Then a sequence $x_n \in X$ is said to converge to $x \in X$ *weakly* if for all bounded linear functionals $\ell \in X^*$ we have

$$\lim_{n\to\infty} \ell(x_n) = \ell(x)$$

Weak convergence was *necessary* and this is absolutely important in my mind for four-sphere theory. We need to have absolutely clear understanding of why weak convergence is necessary *for four-sphere theory* and we need to understand what *necessity of weak convergence means* for physics in Nature. Unlike quantum mechanics theory, which I think was the wrong approach to Nature, four-sphere theory makes stronger claims about Nature, as elements of $X = L^2(\Gamma\Sigma S^4)$ in four-sphere

Date: January 2, 2022.

theory are not *states in a system that is being indirectly represented by a Hilbert space but matter fields*.

2. A Return To Fundamental Questions Of Foundations Of Science

Quantum theory is extremely unsatisfactory for me, and has been from even before 2008. I spent many years of my life obsessively checking that the geometry of existence was indeed a round four-sphere whose radius is $R = 3075.69$ Mpc roughly and such that the reciprocal of the radius, $1/R$ is proportional to Planck's constant, and the quantisation of energy in the *actual universe*, i.e. Max Planck's

$$E = h\nu$$

is due to the spectrum of the Atiyah-Singer-Dirac operator D on smooth spinor fields on the scaled four-sphere. The Dirac spectrum I knew for a long time, for $R = 1$ case is $\mathbf{Z} - \{0, 1, -1\}$. I learned the spectrum from the beautiful paper of Christian Bär from 1996 [2]. Using the resolvent $(D - \lambda)^{-1}$ which is *compact and self-adjoint* we see that quantisation in the actual universe is due to the four-sphere geometry and this is *why there is quantisation of energy in the universe*; this is my explanation of why energy is observed to be quantised in Nature, and this is the four-sphere *scientific theory's explanation* for why we observed quantisation of energy in Nature at all.

The measured $\Lambda = 1.11 \times 10^{-52} m^{-2}$ in four-sphere theory is the *curvature of the four-sphere*. I have shown very clearly that these produce, simultaneously, (a) the correct measurement for width of the electron and (b) the redshift slope that is measured. The explanation of the redshift in four-sphere theory is that it is a *systematic geometric error of assuming that the space through which light traveled is flat rather than curved and the error accumulates with distance of objects. The match of measurements with the theoretical predictions of four-sphere theory is extremely strong. In particular quantum theory is wrong in its model of Nature and four-sphere theory will be able to provide firmer foundations for Science. These are my discoveries, without assistance or support from any university or government agency at great cost to my life and livelihood from 2008-2018. The credit for these is mine and mine alone.*

I have now reached a new stage in the great work of putting firmer foundations for four-sphere theory and so I am looking at the history of functional analysis between 1903 and 1935 roughly. This was the period in physics, simultaneously of the establishment of quantum mechanics. I am particularly interested in the match between mathematical objects and things of the external objective world for I believe strongly that these were wrongly identified in quantum theory.

References

[1] Albrecht Pietsch, *History of Banach Spaces And Linear Operators*, Birkhauser, 2007
[2] Christian Bär, The Dirac Operator On A Space Form Of Positive Curvature, J. Math. Soc. Japan, 48 (1), 1996, pp. 69–83