

I have worked for more than 10 years with a proposal for two kinds of realizations of the genetic code. The first realization, bioharmony model, represents genetics as light 3-chords consisting of dark photons. The second realization is in terms of dark proton or nucleon triplets forming closed or open strings. I have considered several variants of both realizations but the details have remained poorly understood and I have spent a considerable time on wrong tracks.

It however seems that the dust is finally settling (I am writing this in the beginning of 2022). One can see the dark nucleon model as a generalization of the quark model of nucleon and Δ baryons obtained by replacing u and d quarks with dark nucleons. Galois confinement solves the statistics problem. The nucleons are connected by pionic flux tubes to form a closed string-like entity. The dark variants of DNA, RNA, tRNA, and amino-acids (AAs) follow as a prediction. In the sequel, the notation DDNA, DRNA, DtRNA, DAA will be used for the dark variants of the basic information molecules. One can also understand the small symmetry breaking associated with the genetic code.

A concrete realization of bioharmony in terms of the dark nucleon model for codons emerges. The small symmetry breaking effects - the members of doublet that should code for the same amino acid (or act as stop codons), code for different amino acid (or amino acid and stop), are understood. Also the differences between vertebrate and bacterial codes are understood.