

# Analogies of coding systems of DNA and elementary particles

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We suggest that our physical reality can be described in the language of division algebras [1], which dictates that their symmetries must be manifested in the coding systems of different structures of nature. We compare structures of DNA and fundamental fermions of standard model. In both cases we are able to observe three and four-element divisions which comes from the symmetry of the 8-dimensional normed split-algebra. The analogies between the genetic code (given by codons containing three nucleotide bases) and the properties of the structures of all possible baryons (quark triplets) are discussed. Just as we have the degeneration of codons built by four standard nucleotides in that specify 21 amino acids in humans, in the case of hadrons, there are 21 major type of baryons built by four lightest quarks with the degeneration of their spin values. We also note, that the visible matter, which is given by particles and allows us to study the information in terms of countable sets, represents a total 4% of the universe. This percentage corresponds to the amount of information in DNA, responsible for creating life in a form that is familiar to us today.

## References

- [1] M. Gogberashvili, O.Sakhelashvili, "Geometrical applications of split octonions," *Adv. Math. Phys.*, 2015.