Zenon Manifold

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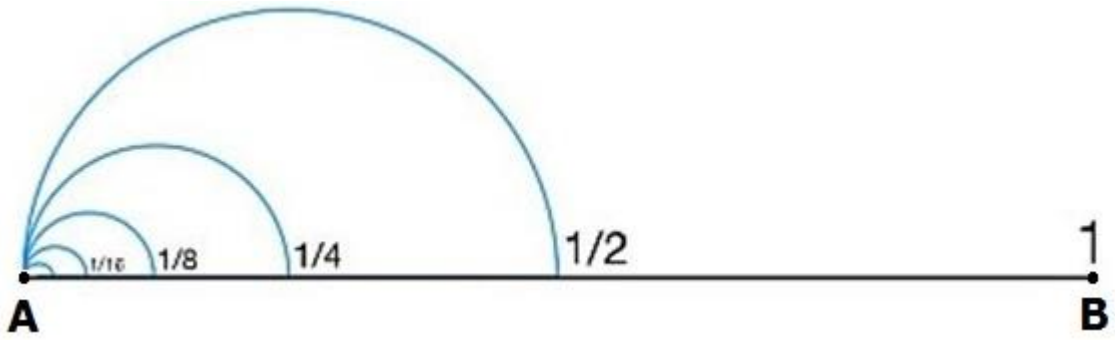
Abstract

Ensuing from first principles, I suggest pre-geometric theory of spacetime [1], in which the apex of light cone 'here and now' is not modeled with dimensionless point [2], but with non-trivial mathematical object along *null intervals*, endowed with brand new structure, topology and dynamics (contrary to Robert Geroch [3]), and defined on so-called Zenon manifold [4].

The full manuscript is available upon request.

According to David Hilbert, an old French mathematician claimed that, if you suggest a new mathematical theory, it could not be considered complete until you have made it so clear that you can explain it to the first man whom you meet on the street. Let me try.

As told by Aristotle (*Physics* VI:9, 239b10), Zeno of Elea (490-430 BC) has formulated the famous dichotomy paradox: That which is in locomotion must arrive at the half-way stage before it arrives at the goal. In the drawing below, if we imagine **B** going back to **A**, then **B** will **stop** *only* at the ultimate limit **B≡A**, which denotes one single dimensionless point [2], and locomotion will be impossible. See Thompson's lamp paradox and **FI**, pp. 15-16 in [1].



[0, ... , 1/16, 1/8, 1/4, 1/2, 1]

The only possible solution to the paradox above is to endow *every* point in [**AB**] with structure, topology and dynamics from the Heraclitean *flow of events* (p. 11 in [1]): replace **B≡A** with the elementary step of time AB depicted with Fig. **2c** at p. 14 in [4]. Contrary to the speculations in current GR textbooks [3], I suggest ***perfect*** continuum of spacetime points as 4D events called 'atoms of geometry' (Fig. 3 at p. 7 and p. 12 in [4]) defined on a brand new pre-geometric manifold, dubbed *Zenon manifold*. In one sentence, I introduce Heraclitean time (p. 11 in [1]) "inside" geometric points AB (read above) to solve the problem of continuum [5]: all points from the number line (p. 39 in [1]) follow the Heraclitean time (Fig. **2c** at p. 14 in [4]) without *any* gaps whatsoever. Now let's delve into details [8].

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References and Notes

1. D. Chakalov, *Platonic Theory of Spacetime*. 10 February 2019, 46 pp., at this http URL.

2. C. Stover and E. Weisstein. "Point." From MathWorld — A Wolfram Web Resource. http://mathworld.wolfram.com/Point.html

3. Robert Geroch, *General Relativity from A to B*, University of Chicago Press, 1978, p. 21. Robert Geroch and Gary Horowitz, *Global Structure of Spacetimes* (1979) at this http URL.

4. D. Chakalov, *Spacetime Engineering*. 2 April 2019, 16 pp., at this http URL.

5. John C. Baez, Struggles with the Continuum, arXiv:1609.01421v3, 2 January 2018, p. 2: "One might hope that a radical approach to the foundations of mathematics—such as those listed above—would allow us to sidestep these problems. However, I know of no significant progress along these lines."

6. D. Chakalov, *The Physics of Life*. 20 January 2019, 14 pp., at this http URL.

7. D. Chakalov, *Hyperimaginary Numbers*. 7 February 2018, 26 pp., at this http URL.

8. Notice that the back bone of Zenon manifold — the noumenal 'monad without windows' (read (**iii**) at p. 6 in [6]) — is not explicitly present in the drawing above. **It** is a brand new notion of 'zero' which, just like the "big bang", does *not* belong to the physical (or rather *physicalized*) spacetime (p. 3 in [1]). We may think of **it** (not "He") as 'Platonic Universe as ONE' and suggest physical theology (pp. 29-30 in [1]) and spacetime engineering [4], and also correct many errors in present-day point-set topology, set theory, and number theory. We do need Mathematics.

As of today, however, nobody is interested. I keep using my "carrot" (p. 1 in [4]), it works like a charm, better than a Swiss watch — read the 'yellow button' story at p. 15 in [7]. Again, the full manuscript *Zenon Manifold* is available upon request (Matthew 7:6).