LETTERS TO PROGRESS IN PHYSICS

On the Cosmophysical Origin of Random Processes

Open Letter to the Scientific Community on the Basis of Experimental Results Obtained During 1954–2014

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"My lords! I came to you to tell most unpleasant news: random physical processes do not exist."

No one person, never, got random time series in the measurements of physical processes on the Earth. There is "non-vanishing scatter of results" which can be found in any physical measurements and observations. It remains existing in the registered data after vanishing all conceivable and inconceivable sources of errors. The "non-vanishing scatter of results" is not random. It is due to the following factors:

— the daily motion and the orbital motion of the planet Earth, where all the observers are located, through the non-isotropic and inhomogeneous cosmic space;

— the motion of the Solar System in the Galaxy;

— changes in the relative positions of the Earth, Moon, Sun and planets.

These conclusions are based on the transformation of the time series of physical measurement data into the series of "insolvent histograms" (such histograms, in which the number of bits and the number of measurements are comparable).

The evidence of non-randomness of the time series is the periodic change of shape of the insolvent histograms.

The non-randomness of shape of the insolvent histograms follows from the next experimental facts:

1. Significant similarity of the histograms obtained from the measurement any processes (from Brownian motion to the alpha-decay) that were recorded in the same moment of time, and in the same geographic location. We call this the "effect of absolute synchroneity";

2. Significant similarity of the histograms, obtained in different geographic locations, but in the same moments of local time;

3. Significantly higher probability of the similarity of the histograms created on the basis of the neighbour (near) non-overlapping segments of the time series, compared to the distant segments of the time series (the "near-zone effect");

4. The clear presence of the near-day, near 27-day, and yearly periods of the appearance of similar histograms;

5. The "space anisotropy effect". It means, in the measurement of nuclear decay fluctuations, that the histogram shape depends on the space direction of the collimators. Also, in light fluctuation measurements, the space anisotropy effect means that the histogram shape depends on the space direction of the light beam generated by LEDs or lasers;

6. The near-day periods of similar histograms were not registered when the light beam coming from a LED, or the alpha-particle beam coming through a collimator are directed to Polaris (this effect was registered in Puschino, Russia). Also, the near-day periods of similar histograms were not registered in the measurements done at the North Pole;

7. Splitting the near-day period into the "sidereal period" (1436 min) and the "solar period" (1440 min);

8. Splitting the yearly period of similar histograms into the "calendar period" (365 days), the "tropical period" (365 days, 5 hours, 48 min), and the "sidereal (stellar) period" (365 days, 6 hours, 9 min);

9. Appearance of similar histograms with the rotation periods of a source slowly rotating in a special device;

10. No near-day periods was registered on a source rotating with a speed of one revolution per day in the opposite direction than the Earth's rotation (thus compensating the daily rotation of the Earth);

11. The "palindrome effect". It is the periodic repetition of mirrored histograms in the moments of time when the daily, orbital, or artificial rotation change its sign (i.e. in the opposite locations on the rotation circle);

12. The algorithmic nature of shape of histograms. Discrete distributions of the number of cofactors. Fluctuations of the number system. Omnibus of the natural numbers.

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Nature (physics) of the registered regularities that are discussed herein is as follows:

1. Because the very different scales of energies in the registered processes (Brownian motion, visible light, alpha-decay), the registered effects can not be explained by "external influences" on these processes. The effects can only be

explained due to the appearance of the observer in similar regions of space along the Earth's trajectory in the cosmos;

2. There exist an optimally small number of measurements used in the histogram creation, in which the accuracy of the similarity of histograms is maximally high. This optimally small number does not depend on the duration of the time interval of the histograms. A fractality is observed: from hours to milliseconds;

3. Similarity of "insolvent histograms" is not due to the statistical (random) regularities. Goodness criteria of hypotheses are inapplicable for histogram shape (the fine structure of insolvent histograms);

4. Beginning from some number of measurement, the fine structure of the distributions does not depend on this number. Remaining this fine structure unchanged with the increase of measurement number contradicts to the large number law. This leads to the "layered histograms phenomenon". It is unclear whether this phenomenon can be explained by the "statistical inertia" or not?

5. Could the characteristic structure of changes in the number of cofactors in the natural numbers, and the dependence of the number system on the "scale unit" to explain the regularities of insolvent histograms?

6. Is the amazing phenomenon of chirality of insolvent histograms also depending on the motion of the Earth in the anisotropic space?

7. Synchronous change of histograms in different geographic locations, with the collimators directed to some special directions in space does not depend on the distance between the locations. The measurements were done along the geographic latitude (the North Pole — Antarctic). Also, synchronous change of histograms is apparently not screened;

8. Nevertheless, when located at a fixed place on the Earth, but with the oppositely directed collimators (to the West and the East) the similarity of histograms appears with the half-day period. It was also registered in experiments with artificial rotation of the source;

9. The presence of clear daily and yearly periods of histograms means that the spatial structure (relievo) of the fractal "coastline" of the Universe remains stable (at least within the scale of our lifespan);

10. It is amazing and remains unexplained that the similarity of histogram series obtained from the measurements done in the equinox moments of time: the moments of transit of the Sun, Moon, Mars, Venus, Mercury through the "point-gap" in the plane of the celestial equator, from above or below the plane;

11. The equinox moments of time also manifested the palindrome effect — the periodic repetition of mirrored histograms.

References

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