Space Curvature and Shnoll Effect

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Abstract

Experimental results obtained during 1954–2014 by Simon E. Shnoll show that the fine structure of distributions of amplitude fluctuations in different processes depends on the position of the Earth with respect to other celestial bodies. The phenomenon includes all processes from biochemical reactions to alpha-decay of nucleons, from the noise of electric networks to random number generators. Until now this phenomenon has not been explained. This article discloses that the cause of the Shnoll effect is the curvature of space which depends on the Earth's position in cosmic space.

Keywords: Shnoll effect, Sun system, astronomy, space, time, gravitation, Unified Field Theory, electric field, magnetic field, conservation of energy, General physics, particle physics

PACS Classification codes:

01.55.+b General physics; 04. General relativity and gravitation; 03.50.-z Classical field theories; 12.10.-g Unified field theories and models

Introduction

In 1954, during an experiment, the biochemist Simon Shnoll obtained two distinct values of subsequent measurements of chemical reaction rate. He repeated his experiments 300 times and always got two distinct peaks and deep gaps between them

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but never other values [1]. The result was in contradiction to theory. He investigated this phenomenon for many years and found that the same thing happened in all processes from the Brownian motion [2] to alpha-decay [3] if they were studied long enough. Moreover, he noticed that the results were synchronized with the movement of celestial bodies [4].

Properties of Shnoll effect

The Shnoll effect appears in "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" [4]. The histograms are synchronized by:

1. Moments of time in the different geographic locations,
2. Presence of the near-day, near 27-day, and yearly periods,
3. Sidereal period (1436 min) and the solar period (1440 min),
4. Splitting the yearly period of similar histograms into the "calendar period" (365 days), the "tropical period" (365days, 5hours, 48min), and the "sidereal (stellar) period" (365days, 6 hours, 9 min),
5. Rotation of slowly rotating experimental device,
6. Palindrome effect [5].

The Shnoll effect disappears on the North and South poles and in the direction of the Polar Star, i.e., in the direction perpendicular to the eclipse. The effect is maximal when the Sun and the Moon are in one direction, i.e., in the period of the New Moon. The effect can be compensated by the synchronous rotation of an experimental device in

the direction opposite to the daily rotation of the Earth. The histograms are similar in the time moments when the Sun, the Moon and the planets transit the celestial equator.

Explanation of Shnoll effect

Many attempts have been made to resolve the conundrum of the Shnoll effect from the positions of string theory, quantum mechanics, relativity theory, etc. All these attempts are based on the presumption that space is an endless eternal container where everything is located. All these attempts have failed. Shnoll expressed the opinion [6] that this phenomenon was caused by the inhomogeneity of space.

The explanation of this phenomenon is disclosed below by using the natural curvature of space caused by the gravity of the Earth and other celestial bodies. The natural coordinate system of space around the Moon is shown in Fig.1.

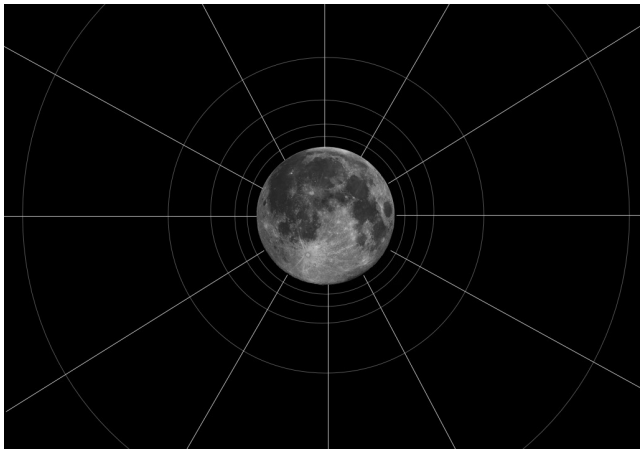

Fig. 1. Gravity field (natural space) of Moon.
Force lines (radial) and equipotent rings (concentric).

The Shnoll experiments are performed on the Earth. The Earth's gravity field and accordingly space are affected by the Sun, the Moon and other celestial bodies (Fig.2.).

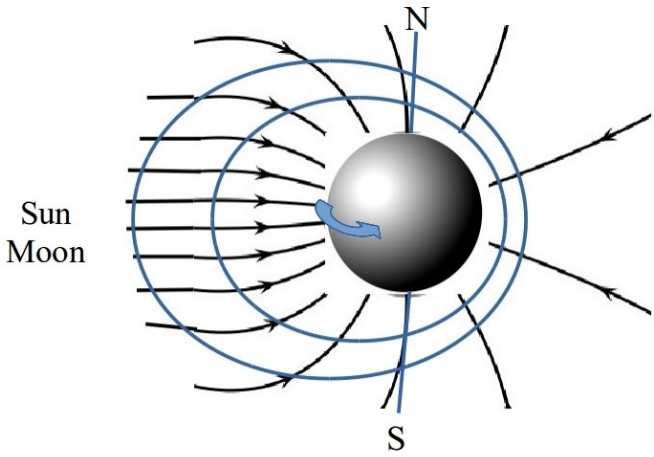

Fig. 2. The effect of Sun's and Moon's attraction on the curvature of Earth gravity field (space).
The rotation of Earth does not affect the gravity force lines in the direction NS.

The maximal curvature of equipotent lines (blue) is in the direction towards the Moon and the Sun. In this direction the Shnoll effect is the greatest. The maximal effect is in the time moments when the Sun and the Moon are in one direction, i.e., in the New Moon. The daily rotation of the Earth is the cause of 24 h periodicity of effect. The rotation of the Earth around the Sun is the cause of yearly periodicity of effect. The maximal effect from the Sun is in December when the Earth is in perihelia. The movement of the Moon around the Earth is the cause of 27 day periodicity of effect. The planets can disturb the space of the Earth in two cases, i.e., when they are in the minimal distance according to the Earth and when they cross the eclipse. The first phenomenon happens rarely.

The solar system is nearly flat in general. For this reason, in the direction North – South the gravity field (space) is not affected by the rotation of the Earth relative to the Sun, the Moon and other celestial bodies of the solar system. This explains the fact that the Shnoll effect is not observed in the NS direction and on the poles.

Conclusions

Space is curved by gravity [7]. The movement of celestial bodies affects the the gravity of the Earth and thus affects the curvature of space. All movements of atoms, particles etc. take place in such curved space along the natural coordinates of a gravity field. There is no direct effect of gravity on the process. It is only the effect of curved space. Measurements are performed based on the presumption that there is the ideal Euclidean space. The Shnoll effect shows the difference between the ideal and real natural space.

From the point of view of the signal theory there is an amplitude modulation. In this case the carrier signal is the stochastic process of an experiment.The modulating signal is the consequence of the periodical movement of celestial bodies. Shnoll discovered that any process is modulated by space curvature. This discovery opened up new opportunities for space exploration. For this purpose, it is necessary to record and analyze signals from cosmos during long time intervals. For example, it is possible that the direction to the center of the Universe can be determined by analyzing changes of CMB (Cosmic Microwave Background) radiation in time.

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