LUNAR SEISMIC DEVELOPMENT AND GAS-DUST STREAMS; GENESIS OF LIFE

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Review of Main Results of Lunar Seismic Development

Introduction: Results of previous research related to lunar seismicity (Nakamura Catalogue) and cosmogonic objects and processes are briefly outlined.

The Mapping of Impact Processes from Meteoroid Streams and Solar Wind on the Moon into Durations of Seismograms: Data of annual histograms (distributions) for durations of seismograms from exogenous acting on the Moon were analyzed. Peculiarities of these actions and their comparison with data of optic lunar events were taken into consideration. It has been found that dust-gas plasma of meteoroid streams and solar wind are modulated by Sun free oscillations. Histograms from meteoroid streams with intensity of 4-8 impact/days contain durations corresponding to periods of free lunar oscillations.

The Temporal Structure of Meteoroid Streams and Lunar Seismicity; the Peculiarities of Shape of Histogram Envelopes: The shapes of histogram envelopes for annual interval are changed from the Gauss curve to a more complicated one. It betokens the unsteady-state of seismic processes and, at times, their similarity to earthquake recurrence curves for regions of mines and/or to energy distribution for powerful solar bursts.

Simple Estimation for Non-gravity Effects on the Moon: Estimations of integral pressure on the Moon by solar wind (under undisturbed Sun and Sun burst) and gas-dust component of meteoroid streams have been made. Energy of these disturbances (under Sun bursts or its maximum stream density) is enough for initiation of free Moon oscillations and recording lunar seismic events.

Conclusions: The Moon is unique cosmogonic and astrophysical detector which can be realized by information of its own seismicity.

Manifestation of Gas-Dust Streams from Double Stars on Lunar Seismicity

Information content of the Nakamura`s Catalog of moonquakes is very rich: from solar-earth tides to clustering among the meteoroid streams [1,2]. The histograms from meteoroid-impact seismic data revealed the seismic wave responses of the Moon to solar oscillations and the action on the lunar surface by dust-gas plasma of meteoroid streams [3]. The time series of seismic events were generated as follows: on the ordinate axis the peak amplitudes of events in standard units, on abscissa axis - seismogram durations of the same moonquakes and subsequent time intervals between them were used [4]. Spectrum of the series of meteoroid streams disclosed time picks on orbital periods of some planets and their satellites and solar oscillations [4, 5]. The research of peculiarities of histogram envelopes [3] and comparative common analysis of solar bursts data and mass meteoroid distribution are confirmed [3, 4] and reveal Forbush`s effect for gas-dust plasma [6]. Hidden astrophysical periodicities of lunar seismicity were earlier obtained from analysis of time series [7] similar to series [4]. A part of results (picks) presents orbital periods of double stars nearest to the Solar system [7]. The path of results of [7] is presented in Table.

The first hypothesis for explanation of this result is existing gas-dust streams from binary stars near the solar system and their interaction with lunar surface; the second hypothesis is connected with the gravitation radiation from the same stars. Probably the first hypothesis is more real. First hypothesis for explanation of the Table results is existing gas-dust streams from binary stars near systems solar system and interacting with lunar surface; second is correlation them to the gravitational radiation from the same stars. We suppose that first hypothesis is more real.

Table

Characteristic of binary stars systems and picks of the lunar seismicity periodicity.

N Tabl 1	lunar periods, day	Name of system	Half period /period day	Masses of component solar unit.		distans parsec	Gravitation radiation. Gd/s
4	6.7	V380 Cyg	6.21	13.3	7.6	4168	10^{21}
		CV Vel	T=6.89	6.0	6.0	1047	
5	4.8	V356 Sgr	4.45	12.3	4.7	3090	10^{21}
6	3.5	CV Vel	3.44	6.0	6.0	1047	$2*10^{21}$
		h Aql	3.58			100	
7	2.25	UW Cma	2.20	43.5	32.5	8912	$5*10^{24}$
8	2.03	AG Per	T=2.029	4.5	4.5	660	
		α Vir	2.007	10.3	6.4	257	$3*10^{22}$
9	1.33	V906 Sco	1.393	3.5	2.8	251	
10	0.966	G Aql	0.975	6.8	5.4	549	$2*10^{23}$

11	0.666	Y Aql	0.651	7.5	6.9	275	$5*10^{23}$
12	0.543	IM Mon	0.595	8.4	5.6	724	$1*10^{24}$
14	0.323	VV U.Ma	0.343	2.1	0.5	512	$1*10^{22}$
		YY Eri	T=0.321	0.76	0.5	42	$1*10^{22}$
16	0.265	i Boo	0.268	1.35	0.68	12	$1*10^{23}$
20	0.160	SW Lac	0.160	0.97	0.82	74	$1*10^{23}$
21	0.142	j U.Mi	T=0.143			>100	
28	0.0751	j. U.Mi	0.0715				
29	0.0559	WZ Sge	T=0.0559	0.08	0.6	100	
34	0.0285	WZ Sge	0.0280	0.08	0.6	100	$4*10^{22}$

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Genesis of Life

If the solar system is reached by the gas-dust streams from binary stars, then all bodes in space have particles of star dust on their surfaces and/or atmospheres. Solar system has made 8-10 revolutions around galactic center and thus captured dust from many thousands stars. As these stars caught in turn dust particles from other stars too then probably our solar system has mainly dust samples from all objects of our galaxy. The age of galaxy and old stars is approximately more than15 billion years and that of the Earth is only ~ 4,5 Gyr. Genesis of Life for the Earth has not more than 3 billion years. Thus comparative analysis of simple balance of these times shows that the genesis of Life for Earth is the result of galactic processes/objects and not of the solar system of course. After formation of the solar system all old and new captured dust particles are first accumulated in the Oort cloud and then they are carried by comets to planets. The modern state of the Earth exists for more than 3 billion years, so possibilities for appearing Life were always. These processes had happened a few times during this period of the Earth state. We must attach modern data of archaeology to confirm these results.

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