

## The tidal rupture mechanism of CERRA by Jupiter perturbation, Moon hypothesis that the mantle piece collides with Earth.

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There is No inevitability to hypothesis of Moon formation mechanism until now. No consistent story that further illustrate the Earth evolution and present condition.

1. Multi-impact hypothesis: MI is a new hypothesis to Moon and Planet Earth's evolution is New answer to the unified understanding of "mystery of Earth".

1. New mechanism of the moon formation

(1). "Origin hypothesis of the moon and the deep ocean-floor by multi-impact mantle pieces" was proposed New collision mechanism at the Earth. The differentiated Mars size of primitive planetichiusu Bourdais'law that has not been proven, was formed in the asteroid belt position.

Why was broken by perturbing tidal forces of Jupiter and flattening of the orbit of primitive planet CERRA by whether?

= Jupiter perturbation protoplanetary Serra was desripped.

(2). "Giant planet collision hypothesis: GI (Cameron etc.)" Difficult problems, etc. that can not be solved are shown below.

The differentiated Mars size of primitive planet, due to the collision ( dependent upon only good lucky) from the revolution surface obliquely backward. =Impossible.

Hypothesis that forms the moon of only mantle component, it is not possible to explain the Earth's evolution and current status.

= Just a hypothesis for the origin of the moon.

2. Comparison the moon formation hypothesis >>>\*\*\*Multi-impact hypothesis : MI \*\*vs \*\*Giant impact hypothesis : GI \*\*\*

(0). History of collision body >>Mantle piece in the tearing mechanism of differentiated planet CERRA vs Differentiated Mars size protoplanetary (No mechanism)

(1). The impact velocity at the time of moon formation>>>Theory calculation , multi-collision MI (12.4km / s , 36.5 degrees) vs GI giant impact. (~8km / s: the most die about 30 degrees)

(2). In Collision energy, >>MI (8.01 . 10<sup>30</sup>J). vs GI (2.05 . 10<sup>31</sup>J) which is about 2.56 times as huge as MI

(3). Collision probability and time mechanisms >>>by high chance about 4 billion years ago , inevitable mechanism vs by low chance about 4.6 billion years ago

(4). Earth's situation at impact >>>Differentiation and Solid Crust solidification and inside Semi-molten vs Melt and Differentiation Magma Ocean core

(5). Partial peeling of the crust Mantle cracking>>>Was realized , Partial peeling of the crust was realized The plate boundary vs None Crust becomes thinner, cracking not occur

(6). Front and back hemispherical differences of Moon,>>>It can be explained by peeling the crust and mantle emitted from the Earth vs Need another solution

(7). Formation position of the moon (Earth radius: R<sub>E</sub>) >>>60 \*R<sub>E</sub> (about Moon position) vs 3 \*R<sub>E</sub> (Limit position of Roche)

(8). Earth's deep ocean- floor, Plate boundary formation, Land and sea distribution >>>All can be formed, vs All Impossible Formation.

3. It is possible unified understanding of the effect of multi-impact hypothesis \*\*\*\*\*to "Mystery of Earth." \*\*\*\*\*

(1). Whether the five times biological large extinctions have occurred in the earth ? It is caused by the multiple of debris has collided to Earth.

(2). Why the Earth's core eccentricity (about 10%) has occurred?

Earth's mantle by CERRA debris collision to the Pacific Ocean position is missing, is due to isostasy to complement it.

<<<The conclusion>>>In this way, the origin of Moon and the Earth evolution according to the multi-impact hypothesis, serves the interpretation the future of unified understanding.

This hypothesis can be explained the evolution and current status of the Earth, than the giant impact hypothesis.

Keywords: Rupture mechanism of CERRA, Transition of Cerra orbit by Jupiter perturbation, CERRA's rupture due to tidal forces,

Moon is formed by the Mantle peace collision to the Earth, Frequency curve showing a two-peak, Velocity 12.4km/s, 36.5degree

