

Abstract Submitted  
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**Gravity Acceleration and Gravity Paradox** HAN YONGQUAN, 15611860790, TANG YUTENG, 15810953809 — The magnitude of the gravitational acceleration of the earth is derived from law of universal gravitation. If the size and mass of the gravitational force are proportional in any situation, then the celestial surface gravity is greater than the celestial center gravity, and objective facts do not match. Specific derivation method,  $F = GMm / R^2 = mg$ ,  $g = GM / R^2 \dots$ ,  $G$  is the gravitational constant,  $M$  is the mass of the earth, and finally the  $g = 9.8 \text{ m} / \text{s}^2$  is obtained. We assume that the earth is a standard sphere, the earth's volume  $V = 4\pi R^3 / 3$ , assuming that the earth's density is  $\rho$ , then  $M = \rho 4\pi R^3 / 3 \dots$ , into the get:  $g = G\rho 4\pi R / 3 \dots$ , the density of the earth is constant. Careful analysis of the formula The result of this calculation, we can reach conclusion the gravity acceleration  $g$  and the radius of the earth is proportional. In addition to the radius of the Earth, on the right of the is constant, That is, the Earth's Gravity acceleration of the outer layer of the earth is greater than the Earth's Gravity acceleration of Inner layer We are in No1 High School, Huairou ,Beijing, China

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