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QUANTUM GRAVITATIONAL EFFECTS IN ROTATION OF BIG BODIES

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It is found that the distribution of 254 detached double-lined eclipsing systems along the coordinate axis of the second degree of the relative orbital velocity of their first and second components has two peaks about H^2, $2H^2$, where $H = 145.5km/s$. The distribution of 2195 spiral galaxies along the coordinate axis of the second degree of the plateau orbital velocity of galaxy stars has three peaks about $(1/2)H^2$, H^2, $2H^2$. Thus, detached double-lined eclipsing systems and spiral galaxies rotate like the quantum hard rotator. The planets of the Solar System rotate like the quantum Kepler rotator. For each of these planets, the semi-major axis of the orbit a is $(GM/H^2)n^2$, where M is the mass of the Sun and n is the number of the orbit. For Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto n equals 3, 4, 5, 6, 11, 15, 21, 27 and 31, respectively. In this case, the average difference between the calculated and empirical values of a is 3.0% with the maximum value of 7.3% for Venus. From the analysis of the planet orbits of the Solar System it is determined that $(GM/H^2)n^2$ is valid when $Gm/n^2 \geq 1190\ km^3/s^2$, where m is the planet mass. For the biggest bodies of the Solar System, Jupiter and the Sun, $(Gm/R)/H^2$ and $(GM/R)/H^2$ are 1/12 and 9 with an error of 0.4% and 0.08%, respectively. R is the radius of a big body. In this regard, it is proposed that with an increase in the mass of any big body M, this body is compressed so that its reduced radius R/GM decreases stepwise, taking quantum values of $n(n+1)/H^2$, n^2/H^2, $1/H^2n^2$, $1/H^2n(n+1)$. Along the coordinate axis M, the lower boundary of the validity of this law is determined by Jupiter and Saturn. For stars, the validity of the law depends on the energy release of nucleosynthesis. Existence of the law is found in stars less than 1.55 and more than 14.10 solar masses.

Primary author(s) : SINITSYN, Sergei

Presenter(s) : SINITSYN, Sergei

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