SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations (IP)

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AUTONOMOUS SPACECRAFT TO MEASURE THE GRAVITATIONAL FIELD AND THE MASSES OF PLANETS AND SMALL BODIES OF THE SOLAR SYSTEM.

Abstract

The author of the article was developed, patented in Ukraine and experimentally confirmed the original radio physics method of measuring the gravitational field, which is based on practical use of the relativistic effect of gravitational frequency offset of electromagnetic radiation. As a source of radiation may be used femtosecond, which must have the stability of radiation is not worse 10-16. Currently, lasers are already in place with the stability of 10-18. These characteristics allow you to measure the gravitational frequency offset based on no more than 1 m in three planes. Error of measurement of free-fall acceleration will be at the level of mkGal units. Dimensions of the spacecraft will not exceed the dimensions of a cube with a side of no more than 1 m. The mass of the spacecraft will not exceed 50 kg. Also as method allows you to measure the mass of the space object. However, such measurements should be taken or on the object, or in the immediate vicinity. Currently, there is no other technology that would allow on board one spacecraft to measure offline and a lot of the space object and the value of the acceleration due to gravity.