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**Abstract**

Results of experimental testing of the second generation relativistic gravimeter RG-2.

In 2023, an agreement was concluded between SRL “GRAVISAT” in Turin, Italy and LLC “SINCO” in Kyiv, Ukraine on the creation of a measuring module for the second generation relativistic gravimeter RG-2. The main difference between RG-2 and RG-1 is the use of a 40 GHz carrier frequency. The RG-1 uses a 1GHz carrier frequency. In December 2023, the measuring module was manufactured. Its weight is 1.5 kg, power consumption is no more than 15 W, and overall dimensions do not exceed 1000\*100\*100 mm. Under an agreement with GE “Ukrmetrtteststandart”, Kiev, Ukraine, certification tests were carried out using the RG-1 computing module. The computing module includes a cesium frequency standard, a frequency comparator and a computer with special software for processing the received information. The cesium frequency standard and frequency comparator have been pre-certified to confirm their performance. In January 2024, the GE “Ukrmetrtteststandart”, Kiev, Ukraine, conducted such certification tests. The purpose of these tests was to determine the gravitational frequency shift by measuring the frequency shift from both outputs of the gravimeter relative to the reference frequency of 10 MHz cesium frequency standard on a frequency comparator. Tests were carried out in vertical and horizontal positions of the gravimeter to determine the presence of gravitational frequency shift. The relative gravitational frequency shift was detected at a level of 10-12, which confirms earlier theoretical calculations. In addition, measurements were made of the frequency shift from both outputs of the gravimeter when the position of the gravimeter changed by 10 and 20 cm in height. No change in the frequency offset value from both outputs of the gravimeter was recorded. However, a change in the frequency offset value from both outputs of the gravimeter was recorded when the height position of the frequency standard changed. This result confirms that the gravimeter measures the value of the acceleration due to gravity at the location of the frequency standard. Currently, work is underway to improve the gravimeter and special software.