

Present state of the Primary Frequency Standard SU CsF02

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The metrological characteristics of the SU CsF02, the atomic cesium fountain developed at VNIIFTRI in 2008-2011 in the frame of “GLONASS” project, are presented¹. SU CsF02 is used for the realization of the time scale UTC(SU), which is the basis for legal time in Russia. The metrological investigations of SU CsF02 are in progress. The estimation of the frequency shifts related to the blackbody radiation, cold collisions, the microwave power dependence, is given.

The accuracy budget of SU CsF02 contains total type B uncertainty of $5 \cdot 10^{-16}$ and a statistical uncertainty type A. A cesium fountain has now demonstrated short-term stability of $2.3 \cdot 10^{-13} / \tau^{1/2}$. Comparison of Cesium Fountain Clocks in Europe and Asia confirmed stated uncertainties of VNIIFTRI Cs fountain standard. Details of this comparison will be given in another report at this conference².

¹ Yu. Domnin., V. Baryshev., A. Boiko, G. Elkin, A. Novoselov, L. Kopylov, D. Kupalov, “The MTsR-F2 fountain-type cesium frequency standard”, Measurement Techniques, vol. 55, p. 1155-1162, 2013.

² A. Zhang’s report “ Comparison of Cesium Fountain Clocks in Europe and Asia”