CCT member and observer Activity Report

Period: January to December 2021

Institute: VNIIFTRI

State economy: FSUE

Number of persons involved in thermometry of the institute: 8

Short summary of research and development:

Investigation of the stability of capsule type standard platinum and rhodium-iron resistance thermometers in ITS-90 reference points for T-T_{90} measurements. Improvement of temperature stabilization equipment in acoustic gas thermometry facilities.

Short summary of recent comparison activity:

Regional key comparisons COOMET.T-K9.1 in progress. Measurements and treatment of results finished in all institutes except PTB. Two standard platinum resistance thermometers prepared for measurements in PTB. Preparation of draft A report in progress.

Short summary of other activities:

Link to bibliography or list of bibliography (last 5 years):

1. Kytin V.G., Ghavalyan M.Yu., Petukhov A.A., Potapov B.G. , Razhba Ya.E., Aslanyan E.G., Schipunov A.N., Realization of new definition of kelvin on National primary state standard of temperature in the temperature range from 0.3 K to 273.16 K GET 35-2021 Izmeritel`naya Tekhnika N. 8, P. 8-15 (2021) (in russian, english version will be published in Measurement Techniques)

2. Kytin V.G. , Ghavalyan M.Yu., Potapov B.G., Aslanyan E.G., Shchipunov A.N., Installation of Relative Acoustic Gas Thermometry in the Low Temperature Range from 4.2 to 80 K, Measurement Techniques, V. 63, N. 1, P. 45-52 (2020)

3. Kytin, V.G., Kytin G.A., Ghavalyan M.Yu, Aslanyan E.G., Shchipunov A.N., Acoustic gas thermometry setup for thermodynamic temperature measurements between 4.2 K and 273.16 K. Al`manac of Modern Metrology N. 12, P. 43-64, 2017.

4 S M Osadchii , B G Potapov, A. A. Petukhov, K D Pilipenko and I.E Razhba. Implementation of the triple oxygen point for capsule resistance thermometers // Almanac of modern metrology. 2020. V 1. p. 136-147.

5 S.M. Osadchii . Method for measuring the resonant frequency of an acoustic resonator of a gas thermometer. Patent. 2019.

5.M. Osadchii, B.G. Potapov, A. A. Petukhov, K.D. Pilipenko. The system of temperature stabilization of the acoustic gas thermometer. Works of sixty-first All-Russian scientific conference MIPT. 19-25 of November 2018. Fundamental and applied physics. p 143-145.

6 S M Osadchii , B G Potapov and K D Pilipenko Development of absolute acoustic gas thermometry for State primary standard of the temperature unit - kelvin in the range 0.3-273.16 K in VNIIFTRI and total standard uncertainty the thermodynamic temperature measurements near triple point of water. Journal of Physics Conference Series, 2018-vol 1065, page 122013

7 S M Osadchii , B G Potapov, A. A. Petukhov, N. A. Sokolov, O. E. Dragunov and K D Pilipenko Stabilization of the Temperature of Resonator of an Acoustic Gas Thermometer// Measurement Techniques. 2018. Volume 61, Issue 9, pp 932–936

8 S.M. Osadchii, B.G. Potapov, K.D. Pilipenko, E.G. Aslanyan, A.N. Shchipunov Measurement of the Boltzmann constant in a Quasispherical acoustic resonator Measurement Techniques-2017- vol. 60-issue 7-pp656-665

9 S M Osadchii , B G Potapov and K D Pilipenko Acoustic Gas Thermometer for the realization of new Kelvin based on Boltzmann constant // Almanac of modern metrology. 2017. V 12. p. 15–42

10 S.M. Osadchii, B.G. Potapov, K.D. Pilipenko, E.G. Aslanyan, A.N. Shchipunov Measurement of the Boltzmann constant using equipment of acoustic gas thermometer, Bulletin of the metrologist, 2017 V3, p 4-8.

На руском:

Period: с января по декабрь 2021

Institute: VNIIFTRI

State economy: FSUE

Number of persons involved in thermometry of the institute: 8

Short summary of research and development:

Исследование стабильности эталонных платиновых капсюльных термометров сопротивления в реперных точках шкалы МТШ-90 для измерения Т-$Т_{90}$. Совершенствование систем стабилизации температуры установок акустической газовой термоммтерии.

Short summary of recent comparison activity:

Проведение региональных ключевых сличений COOMET.T-K9.1 (КООМЕТ 704/RU/16). Измерения и обратка результатов завершена во всех метрологических институтах за исключением PTB. Подготовлены два платиновых термометра сопротивления для измерений в PTB. Идёт подготовка предварительной версии отчёта.