

## Preface

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This Special Issue of the Journal of Low Temperature Physics contains selected papers based on the talks and presentations given at the XXXVII International Conference on Low Temperature Physics (NT-37). This conference has been held in Kazan, Russian Federation, June 29 to July 3, 2015.

The prehistory of these conferences actually started in 1937, when the session of the Physical Department of the USSR Academy of Sciences was held in January in the Physical-Technical Institute of Kharkov, one of the two points in the USSR where they were able to produce liquid helium at that time. The results of many low-temperature studies were discussed. The next low-temperature conference was organized by the Physical-Mathematical Department of the USSR Academy of Sciences and by the Institute for Physical Problems in Moscow in January 1941. The Conference Chairman, P. L. Kapitza, reported his famous paper “Properties of liquid helium”. The official history of the Conferences on Low Temperature Physics started in 1954: in June the first official Conference took place, which then became the annual event till the middle of the sixties, biennial afterwards, and triennial nowadays. The geography of the conference broadened while more and more scientific centers acquired helium liquefiers. This conference took place in Kazan for the fourth time: the previous ones were held here in 1965 (NT-12; the patriarch of low-temperature physics, the Nobel prize winner Petr Kapitza, was the Chairman of the Conference), in 1992 (NT-29) and in 2000 (NT-32).

In total 199 scientists took part in the XXXVII Conference on Low Temperature Physics, 12 were invited and 66 oral talks were reported, and 122 posters were demonstrated. A major part of the reports (77) has been presented at the sessions on “Low-temperature magnetism and low-temperature properties of dielectrics”. The spirited discussion, including at the “Round table”, took place on the possibility of realizing and observation of the magnons Bose–Einstein condensation in definite antiferromagnets. In his closing speech at the Open Meeting of the Low-Temperature Council of the Russian Academy of Sciences the Chairman of the Council, Academician A. F. Andreev, said: “I like very much the manner of the discussion: there was no mutual

endorsement, but at the same time no fisticuffs. It is very good, this stimulates the work. Such discussions should be practiced”.

What is good is that a lot of young scientists took part in the Conference: 40 participants were not older than 30. One of the oldest participants of the Conference, the professor of the Theoretical Physics Department of the Kharkov National University, Valentin Peschansky, took part in almost all Conferences, including the first one (1954).

The Conference finished with the Open Meeting of the Low-Temperature Council of the Russian Academy of Sciences. A. F. Andreev in his closing speech said: “I think that here, in Kazan, for 5 days we have done a very good job: we have demonstrated that our low-temperature community, although not that numerous, has shown nice scientific results at this Conference. And it is not only me thinking so: the people I talked with confirm this. So what is good is that we can say: our low-temperature science is still at the high level and will remain at this level if we keep the pot boiling. We have to thank our Kazan colleagues for the hard job they have done organizing this Conference.”

D. A. Tayurskii

M. S. Tagirov

A. V. Dooglav