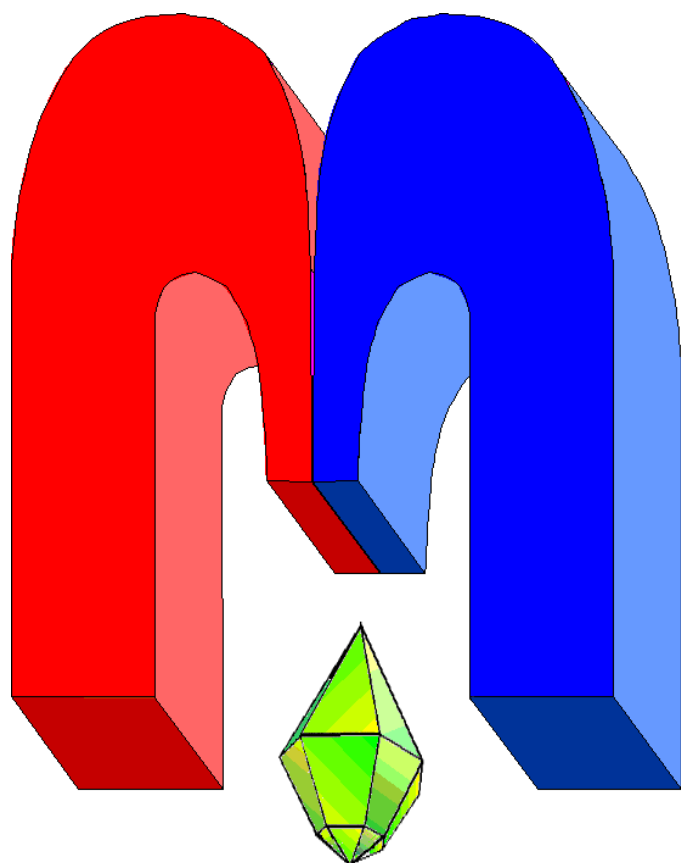


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In Kazan University the Electron Paramagnetic Resonance (EPR) was discovered by Zavoisky E.K. in 1944.

XVIII International Youth Scientific School “Actual Problems of Magnetic Resonance and its Application”[†]

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International Youth Scientific School “Actual Problems of Magnetic Resonance and its Application” takes place every year at the hometown of magnetic resonance, Kazan, Russia, since 1997. Our School is organized by Kazan (Volga Region) Federal University (KFU) and Zavoisky Physical-Technical Institute of Russian Academy of Sciences. The School-2015 is financially supported by Dynasty Foundation.

The XVIII School was held between the 26th and 30th of October 2015 after the International Conference “Modern Development of Magnetic Resonance”. At the conference Zavoisky Award is distributed for notable achievements in magnetic resonance spectroscopy at the latter conference. We are very pleased that one of the School founder, permanent chairman of the program committee and the young scientists contest jury, professor Vadim Atsarkin (Institute of Radio-engineering and Electronics of RAS, Moscow) received Zavoisky Award this year. Vadim Alexandrovich Atsarkin is an excellent experimentalist, supervisor and author of a large number of world-wide known radiospectroscopic scientific investigations. We would like to mark one of his best character, he is very active at magnetic resonance spectroscopy popularization among young scientists in Russian Federation and the other countries. He is always a man of principle during discussions, and his activity plays a great role in education of young generation of physicists. His useful remarks and kindly tone allows our “schoolboys” to call him the Teacher.

The following famous magnetic resonance specialists presented their lectures on XVIII School: Yu.M. Bunkov (Grenoble, France), E.B. Feldman (Chernogolovka, Russia), V.A. Atsarkin (Moscow, Russia), V.V. Fedorov (St.Petersburg, Russia), M.V. Eremin (Kazan, Russia), A.V. Klochkov (Kazan, Russia), R.V. Yusupov (Kazan, Russia), I.V. Romanova (Kazan, Russia), N.A. Balakirev (Kazan, Russia) and V.V. Kuzmin (Paris, France). We should note that five of them are our School “graduates” and winners of our traditional young scientists contests. The appearing of the new generation of researchers in science allows our School to be confident in its future. Sixty-five participants attended XVIII School, eighteen of them presented universities and academic institutes of Moscow, Novosibirsk, Chernogolovka, Ekaterinburg and Irkutsk, while other young scientists presented various scientific centers of Kazan. Topics of their presentations covered all main trends of magnetic radiospectroscopy, NMR and EPR. Pioneer studies of the new perspective materials and the new magnetic resonance techniques were presented as well.

Prof. V.A. Atsarkin and prof. E.B. Feldman, along with Kazan scientists prof. M.S. Tagirov, prof. V.A. Zhikharev, ass. prof. S.B. Orlinskii and ass. prof. A.V.Klochkov took part in the traditional young scientists contest jury board (Fig. 1). Three following young scientists award winners were named:

[†]This material is prefaced a publication of papers selected at XVIII International Youth Scientific School “Actual problems of magnetic resonance and its application”, Kazan, 26 – 30 October 2015.



Figure 1. The participants of the International Youth Scientific School “Actual Problems of Magnetic Resonance and its Application”.

1. M.A. Fayzullin (Kazan Federal University). His investigation “Temperature dependence of ESR linewidth and spin-spin correlation functions in one dimensional magnets” is based on theoretical studies of spin-spin correlation in magnetically concentrated systems on the example of 1D antiferromagnet chains with Dzyaloshinskii-Moriya interaction. It was shown that quantum mechanics technique allows to obtain reliable results for spin correlation temperature dependences, especially at low temperatures. Obtained dependencies are in a good agreement with experimental results for Cs_2CuCl_4 and $(\text{C}_7\text{H}_{10}\text{N})_2\text{CuBr}_4$ 1D antiferromagnets.
2. T.A. Soldatov (P.L. Kapitza Institute for Physical Problems RAS and Moscow Institute of Physics and Technology State University). The topic of his work “Electron spin resonance in a model $S = \frac{1}{2}$ chain antiferromagnet with a uniform Dzyaloshinskii-Moriya interaction $\text{K}_2\text{CuSO}_4\text{Br}_2$ ” is close with the previous one. However the Jury decided to mark this studies because they are truly outstanding experimental ones. Detailed measurements of frequency and magnetic field dependencies up to 240 GHz were performed at ultra low temperatures. Obtained results are in a good agreement with the known theoretical predictions of spin dynamics of Heisenberg antiferromagnets with $S = \frac{1}{2}$.
3. A.S. Poryvaev (International Tomography Center, Novosibirsk). His work “Mobility and reactivity of 4-substituted TEMPO derivatives in metal-organic framework MIL-53(Al)” is focused on EPR studies of some nitroxides. Calculations of EPR spectra using EasySpin software and experimental measurements in X-band allowed for detailed investigation of guest-host interactions in nanosized traps (Fig. 2)

Besides young scientists award winners the School also rewards the most active young participants for the best presentations and discussions. Three young scientists, B.F. Gabbasov (Kazan Federal University), Yu.V. Krasnikova (P.L. Kapitza Institute for Physical Problems RAS, Moscow) and I.V. Yatsyk (Zavoisky Physical-Technical Institute of Russian Academy of Sciences) received diplomas of the XVIII School. Traditionally the School offered an opportu-

nity to become acquainted with the experimental work on modern magnetic resonance setups. EPR spectrometers masterclass was given to 25 young participants by ass.prof. S.B. Orlinskii (Fig. 3a and 3b).

A cultural program is mandatory for our School and helps participants to establish friendly relations with their young colleagues from different scientific organizations. Participants of School visited E.A. Eversmann Zoological and A.A. Shtukenberg Geological Museums of KFU.

Now the XVIII School “Actual Problems of Magnetic Resonance and its Application” belongs to the History. Lectures, reports, questions, discussions remained in our memory. . . Let us wait for new meeting. . . The new generations of magnetic resonance spectroscopy researchers of Russia will be always welcome in Kazan.



Figure 2. Award ceremony.

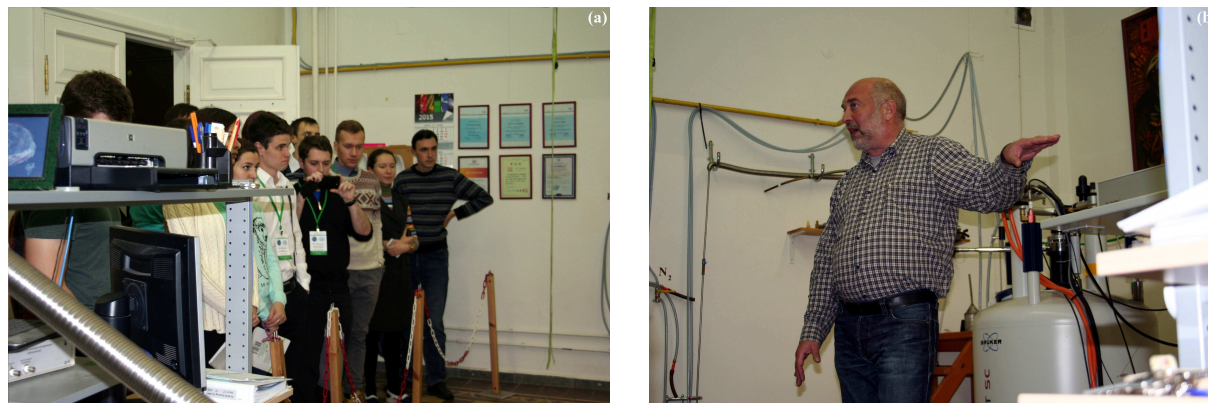


Figure 3. EPR spectrometer masterclass (a) by S.B. Orlinskii (b).