

Fifteenth All-Union Conference on the Physics of Magnetic Phenomena (Perm', September 1981)

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In accordance with USSR Academy of Sciences schedule of All-Union Meetings and Conferences in the natural and social sciences for 1981, the Fifteenth All-Union Conference on the Physics of Magnetic Phenomena was held at Perm' from 8 through 11 September 1981.

The conference covered various problems in the physics of magnetic phenomena with a great deal of latitude. Its sessions discussed progress in the theoretical and experimental study of magnetism and magnetic materials and new principles in their application. The conference was attended by 400 scientists. It worked almost exclusively on pure theoretical-physical problems in the physics of magnetic phenomena, giving no attention to problems of a technological or narrow applied nature, which were subjects of other industrial scientific-technical meetings and seminars (for example, the Sixth All-Union Conference on the Physics and Physical Metallurgy of Electrical Steels and Alloys at Asha in September 1981, the Interdepartmental Seminar on Amorphous Magnetic Materials at Donetsk in September of 1981, the Eighth All-Union Conference on Permanent Magnets at Vladimir in September 1982, and others).

In accordance with the program of the conference, its plenary and section meetings heard 22 invited papers (40 minutes each), 63 papers selected by the Steering Committee (20 minutes each), and 273 poster presentations in the following subdivisions:

1. Magnetism of collectivized electrons.
2. Magnetic excitations of spin systems.
3. Magnetic resonance (electronic and nuclear) and relaxation; the Mössbauer effect in magnetically ordered substances.
4. Kinetic phenomena in magnetics.
5. Optical and magneto-optical phenomena.
6. Magnetic structures and neutron scattering.
7. Magnetic anisotropy and magnetoelastic phenomena.
8. Domains and domain boundaries.
9. Magnetic phase transitions.
10. Magnetization and magnetization-reversal processes: the physics of magnetically soft and magnetically hard materials.
11. Magnetic semiconductors and dielectrics.
12. Magnetism of amorphous substances and spin glasses.

13. Influence of the surface on magnetic properties; low-dimensional magnetism.

14. The physics of magnetic liquids.

The work of the conference showed that fundamental problems in the field of magnetism are being solved successfully in the USSR, and that this raises significantly the general level of fundamental conceptions in solid-state physics as a whole. These theoretical advances form a base for the production of new magnetic materials with predetermined combinations of physical properties, and this, in turn, has considerable influence on progress in a whole series of leading branches of contemporary technology. During the two years elapsed since the preceding All-Union Conference at Khar'kov, Soviet research in various areas of the physics of magnetic phenomena has been broadened and deepened significantly. The theory of magnetism is being developed intensively (this applies in particular to the theory of collectivized electrons, the theory of amorphous magnetism, the theory of cylindrical magnetic domains, etc.). The use of modern experimental methods to study the physical nature of the properties of various classes of magnetics and their structure and behavior under various external inputs has been expanded significantly (for example, neutron and muon methods are being used to study magnetic and domain structures of ferromagnetic metals and alloys, etc.).

In full adherence to the conference program, meetings of all 37 sections were held, with quite lively discussion of the research results. The poster presentations were discussed with a great deal of interest and activity, which confirmed the extraordinary usefulness of this form of communication between conference attendees. Going beyond the conference program, one of the section meetings held a highly successful "panel discussion" on one of the priority problems of magnetism—collectivized-electron theory.

The excellent organization of the work of the conference ensured a vigorous exchange of information among its attendees and pointed up the most urgent and promising directions for further research in the field of magnetism.

The materials of the conference are being published by the Steering Committee in the form of a collection of abstracts of the papers. It was recommended that the Sixteenth All-Union Conference on the Physics of Magnetic Phenomena be held in September 1983 at Yasnaya Polyana near Tula.

Translated by R. W. Bowers