

# Organization and Communications

## SEMINARS

---

"The Rutherford computer network and ISIS data acquisition system".

W.C.A.PULFORD, Rutherford Appleton Laboratory, U.K.

"The development status of the new high resolution neutron source at JINR".

L.B.PIKELNER, E.A.PERELSTEIN, V.L.LO-MIDZE, JINR, USSR.

"Neutron scattering in single crystals".

S.Sh.SHILSTEIN, KIAE, USSR.

"The prospects for the Laboratory computing center development".

G.P.ZHUKOV, JINR, USSR.

"Precise experiments on neutron lifetime with ultra cold neutrons".

A.P.SEREBROV, LNPI, USSR.

"The electronic mail at JINR".

V.P.SHIRIKOV, JINR, USSR.

"Magnetic inelastic neutron scattering at ISIS".

R.OSBORN, RAL, U.K.

"The pressure of light".

M.A.OLSHANYJ, ISAN, USSR.

"Structural investigations of high- $T_c$  materials at the Laboratory of Neutron Physics".

A.M.BALAGUROV, JINR, USSR.

"Structure and dynamics of quantum films on graphite".

H.LAUTER, ILL, France.

"About one possibility of improvement of thermal neutron extraction from moderators".

O.N.GONCHARENKO, INI, USSR.

"Excitation of atomic electron shells by neutrons".

I.N.MIKHAILOV, JINR, USSR.

"Daresbury synchrotron radiation facility".

J.P.DUKE, Daresbury Laboratory, U.K.

"What is C-60 ?".

A.V.ELETSKIJ, B.M.SMIRNOV, KIAE, USSR.

"Los Alamos neutron facilities".

Yu.P.POPOV, Yu.M.GLEDENOV, E.I.SHARAPOV, JINR, USSR.

## Meetings



### VI International School on Neutron Physics

8-18 October 1990, Alushta,  
the Crimea

This School dedicated to the memory of Professor I.M. Frank (23.10.1908–22.06.1990), the Nobel Prize Winner, was organized by the JINR with support from the Ministry of Atomic Power and Industry of the USSR. Specialists in neutron physics discussed modern trends of development of neutron sources, present status of experimental and theoretical research in the field of condensed matter and nuclear physics with neutrons as well as their great potential to be realized. General survey of scientific activities at already operating sources of neutrons and at those under construction in different countries has been presented. 251 scientists from 18 countries took part in this School.

The School Proceedings were published by the Publishing Department of JINR in 1991.

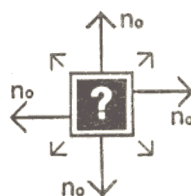
### Investigation of Nuclei with Neutrons

12-14 March 1991, Dubna

The II Workshop was attended by 80 scientists, including 15 from the JINR Member States, 1 from the USA and 50 from the USSR. There was discussed the present state, perspectives and the program for physical investigations in the frame of the project of the new high resolution neutron source (HRNS). The results of joint experiments of LNP (JINR) and LNPI (Gatchina) on the determination with a record precision of the neutron lifetime by the UCN storage method were first reported. There were presented recent results in the physics of fission that permitted one to look differently at the descent of a fissioning nucleus from the saddle point. The cross section data for

neutron induced reactions on unstable target nuclei were also reported. They are important in astrophysics.

The participants called for support for advanced studies in nuclear physics with neutrons and suggested that this Workshop should become traditional and of international status.



### International Workshop on Advanced Pulsed Neutron Sources

25-27 June 1991, Dubna

The Workshop aimed at considering the possibilities of upgrading now operating and of creating new powerful sources of neutrons. The scientific leaders of all high intensity neutron sources took part in the Workshop. Among them were 9 scientists from the JINR Non-Member States and 50 from the JINR and the USSR. In a number of reports quite new ideas were advanced. It is acknowledged that financial support from the Institute of Nuclear Research in Troitsk has contributed much to the success of the Workshop organization.

### USA-USSR Workshop on Condensed Matter Physics

18-21 June 1991, Upton, USA

The Workshop was organized by leading neutron centers of the USA and the USSR with the support of the Department of Energy of the USA Government. The Workshop was held at the Brookhaven National Laboratory, and it was attended by 10 scientists from the USA and 10 from the USSR. The USSR delegation consisted of 4 scientists from JINR, 3 from the Kurchatov Institute of Atomic Energy and 3 from the Petersburg Institute of Nuclear Physics. The USA neutron scientists were from Brookhaven, Oak Ridge, Los Alamos, Argonne National Laboratory and from

the National Institute of Standards and Technology. Discussions concentrated on most interesting results in the field of the physics of condensed matters obtained by neutron scattering methods in the USA and USSR, as well as on perspectives of cooperation in investigations at neutron sources. The emphasis was put on the study of high temperature superconductivity and development of the small angle neutron scattering method.

## Training Center

The 1991 year marks the beginning of activity of the Dubna Training Centre of Moscow State University and Moscow Engineering and Physical Institute at the Joint Institute for Nuclear Research.

The Centre has the following directions of training:

- nuclear physics;
- particle physics;
- nuclear methods in condensed matter physics and in a high temperature superconductivity;
- radiobiology.

The training centre admits students in their senior years after finishing the general physics courses and listening to the primary special courses in the corresponding fields.

Students in the Centre listen to lectures that are given by leading scientists of the Joint Institute for Nuclear Research (JINR), the Moscow State University, the Moscow Engineering and Physical Institute and have a scientific practice at the laboratories of JINR. During this practice they get an experience of working at experimental facilities such as proton and heavy ion accelerators, a neutron pulsed reactor and a computer centre.

A normal duration of full program training at the Dubna centre is two years. It is quite possible

to admit students for shorter periods too, including one or two months of intense courses on some selected topics. The working language for foreign students is English.

It is possible to admit post-graduated students also who could listen to lectures on some chosen subjects and take part in scientific researches at JINR laboratories.

Of JINR laboratories the Laboratory of Neutron Physics is the basic one in the fields of nuclear methods in condensed matter and in high temperature superconductivity. The Laboratory's scientists give courses of lectures in

- methods of investigating condensed matter at nuclear reactors and accelerators;
- fundamental neutron physics and the physics of neutron sources;
- low temperature physics;
- theoretical aspects of the physics of condensed matter;
- the physics of high temperature superconductivity;
- methods and instrumentation of experiments with neutrons, etc.

Besides that the students acquire experience in experimental data processing, work on modern personal computers and knowledge of the electronic equipment that serves the instrumentation suit of the Laboratory.

## List of visitors from non-member states of the JINR in 1991

Name	Organization	Country	Dates of visit
Dr F Weidhase	TU, Dresden	FRG	15.01–19.01 19.04–19.05 20.09–30.09
Dr O Antson	ESPOO, Helsinki	Finland	11.02–14.03
Dr H Hartmut	TU, Kiemnitz	FRG	14.02–06.03
Dr W Boede	IFK, Rossendorf	FRG	25.02–08.03 16.11–08.12
Dr P Reichel	IFK, Rossendorf	FRG	25.02–08.03 16.11–08.12
Dr R Osborn	RAL, Chilton	United Kingdom	27.02–09.03
Prof P Hiismäki	ESPOO, Helsinki	Finland	11.03–14.03 26.05–29.05
Prof S Raman	ORNL, Oak Ridge	USA	11.03–15.03
Dr H Lauter	ILL, Grenoble	France	08.04–13.04 09.11–20.11
Prof Liu Zigzi	Academia Sinica, Beijing	China	22.04–26.04
Dr B Koenig	Institute of Physics, Leipzig	FRG	02.05–15.06
Dr R Benzing	Imperial College, London	United Kingdom	25.05–08.06
Dr W Birkholz	High Technical School, Leipzig	FRG	03.06–14.06 10.11–25.11
Dr P Duke	Daresbury Laboratory, Daresbury	United Kingdom	13.06–14.06
Dr B Lippold	Institute of Physics, Leipzig	FRG	18.06–28.06
Prof Jian-Gao Zhao	Academia Sinica, Beijing	China	20.06–30.06
Prof Zhan Wen Shan	Institute of Physics, Beijing	China	20.06–30.06
Prof Liu Xiang Lin	Institute of Metallurgy, Shanghai	China	20.06–30.06
Prof Wu-yan Lai	Institute of Physics, Beijing	China	20.06–30.06
Prof Sun Shen Tai	Institute of Metallurgy, Shanghai	China	20.06–30.06
Dr Yang Linyuan	Institute of Physics, Beijing	China	20.06–30.06
Dr G Bauer	PSI, Zurich	Switzerland	24.06–28.07
Dr T Broome	RAL, Chilton	United Kingdom	24.06–27.06
Dr J Carpenter	IPNS, Argonne	USA	24.06–27.06
Dr K Noak	IFK, Rossendorf	FRG	24.06–27.06
Dr G Russel	LANSCCE, Los Alamos	USA	24.06–27.06
Dr K Sumita	Osaka University, Osaka	Japan	24.06–27.06
Dr I Thorson	TRIUMF, Vancouver	Canada	24.06–27.06
Prof N Watanabe	KENS, Ibaraki-ken	Japan	24.06–27.06
Dr R Long	American Nuclear Society, Grand Park	USA	27.06
Dr B Kuenstler	IFK, Rossendorf	FRG	26.06–14.07
Dr H Heyne	IFK, Rossendorf	FRG	26.06–14.07
Prof Zhong Wenguang	Tsinghua University	China	01.07–31.07
Prof N MacMahon	Imperial College, London	United Kingdom	14.07–28.07
Dr M Hawe	Easthamstead Park School, London	United Kingdom	14.07–28.07
Dr G Striele	University of Tubingen	FRG	07.09–08.09
Dr C Wilson	RAL, Chilton	United Kingdom	02.10–05.10

## Personnel

The Laboratory staff consists of permanent and non-permanent contract employees. Most employees from the USSR have permanent positions. A total of 580 staff posts were occupied in 1991. Staff details per departments are given in the Table. Under non-permanent contracts specialists from member states of the JINR and non-member states are working. Among them there are cadres from Bulgaria, Germany, Cuba, Czechoslovakia, Hungary, Korea, Mongolia, Poland, Romania and Vietnam.

### Staff Situation in 1991

Departments	Scientists (permanent)	Scientists (non-permanent)	Engineers (permanent)	Engineers (non-permanent)	Technicians
Neutron Sources and Reactor Safety Sector	7	3	60	2	17
Condensed Matter	21	16	20	3	6
Nuclear Physics	29	13	13	—	11
Applied Research, Low Temp. Sector, Radiation Res. Sector	11	13	12	1	5
Computing	17	5	30	4	15
Technical and Admi- nistration Services	—	—	80	—	166
<b>TOTAL</b>	<b>85</b>	<b>50</b>	<b>215</b>	<b>10</b>	<b>220</b>

## Finance

The Laboratory's expenditure for the financial year 1991 was 11.27 million roubles, the corresponding figure for 1990 was 9.02 million roubles (see Table 1). This was supported centrally by the budget of the Joint Institute for Nuclear Research, a constituent of which is the Laboratory of Neutron Physics, and, externally, by national programs funds and financial contributions on contracts. Part of the Laboratory's budget is assigned to the JINR for the Administration Division and common services. The other part covers the Laboratory's staff expenditure, research and

development, neutron sources maintenance, buildings, etc.(see Table 2).

Positive balance between funds received (Table 1) and paid out (Table 2) formed thanks to national programs financing and contracts. It was at the disposal of the leaders of corresponding projects for them to be able to employ extra staff members on the short-term contract basis and to purchase necessary materials and equipment.

The materials, research and equipment development expenditure was reduced essentially this year in connection with the increased expenditure

on the other items of the budget caused by inflation. The Laboratory's Directorate made great efforts to find extra sources of financing as the Laboratory's resources were insufficient even to maintain and run satisfactorily the existing research facilities, to say nothing of the development of new instruments.

In 1991 the LNP Directorate applied to the JINR Directorate for the financial support of some projects of advanced neutron instruments and had

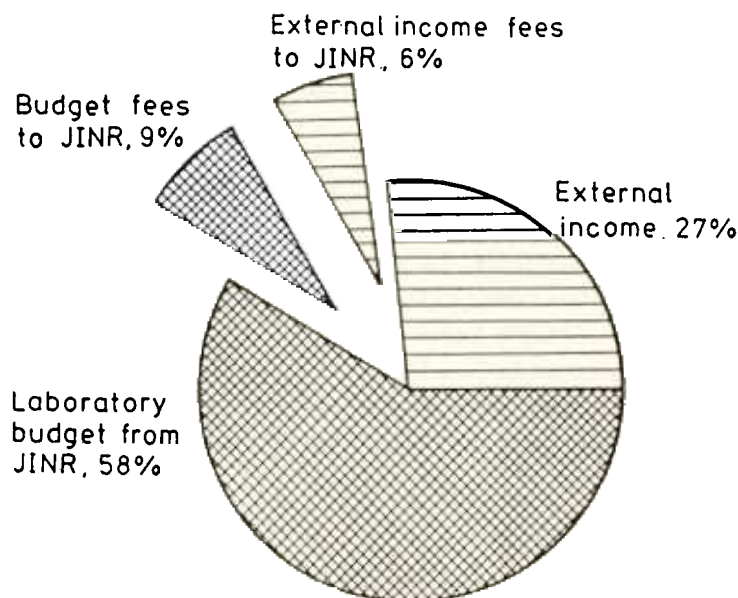
received additionally (not indicated in Tables) for

- the upgrading of the IBR-2 reactor \$ 352 th.
- the construction of the High Resolution Fourier Diffractometer \$ 660.6 th.
- the development of the texture diffractometer \$ 99.2 th.

**Table 1. Comparison of 1990 and 1991 Budgets (Income)**

Income	Income 1990		Income 1991		Change %
	th. roubles	%	th. roubles	%	
Laboratory budget from JINR	5348.8	59	7500.2	67	+40
National program on solid state physics	2000.0	22	2000.0	18	-
National program on high temperature superconductivity	1435.0	16	1389.0	12	-3
Other programs	235.4	3	381.5	3	+62
<b>TOTAL</b>	<b>9019.2</b>	<b>100</b>	<b>11270.7</b>	<b>100</b>	<b>+25</b>

**Laboratory's fund distribution in 1991**



**Table 2. Comparison of 1990 and 1991 Budgets  
(Expenditures)**

Expenditure	Expenditure 1990		Expenditure 1991		Change %
	th. roubles	%	th. roubles	%	
<b><u>Neutron sources</u></b>					
<b><u>IBR-2</u></b>					
Staff costs	417.5	7	701.1	9	+68
Other expenditures	246.0	4	310.1	4	+26
<b><u>IBR-30+LUE-40</u></b>					
Staff costs	270.6	4	447.4	6	+65
Other expenditures	55.4	1	102.9	1	+86
<b><u>Other Departments</u></b>					
Staff costs	1788.3	28	2909.6	36	+63
Materials and equipment	1578.0	24	449.4	6	-72
Electric power, heat and water supply	213.4	3	342.7	4	+61
Buildings	179.3	3	197.6	2	+10
Long term supplies and services	155.0	2	310.2	4	+100
Short term supplies and services	142.3	2	71.3	1	-50
Travel	59.8	1	202.2	2	+238
Other investments	205.0	3	316.5	4	+54
<b><u>Fees paid to JINR</u></b>					
On laboratory budget	795.7	12	959.5	12	+21
On external income	353.8	6	720.9	9	+104
<b>TOTAL</b>	<b>6460.1</b>	<b>100</b>	<b>8041.4</b>	<b>100</b>	<b>+24</b>