

8.1. STRUCTURE OF LABORATORY AND SCIENTIFIC DEPARTMENTS

Directorate:
Director:
V.L.Aksenov
Deputy Directors:
A.V.Belushkin
W.I.Furman
Scientific Secretary:
V.V.Sikolenko

Reactor and Technical Departments
Chief engineer: V.D.Ananiev
IBR-2 reactor
Chief engineer: A.V.Vinogradov
IBR-30 booster + LUE-40
Head: S.A.Kvasnikov
Mechanical maintenance division
Head: A.A.Belyakov
Electrical engineering department
Head: V.P.Popov
Design office
Head: V.I.Konstantinov
Construction
Head: A.N.Kuznetsov

Scientific Departments and Sectors
Condensed matter department
Head: V.L.Aksenov
Nuclear physics department
Head: V.N.Shvetsov
Department of IBR-2 spectrometers complex
Head: A.V.Belushkin
Department of IREN
Head: A.P.Sumbaev
Nuclear Safety and applied research
Head: V.I.Luschikov

Administrative Services
Deputy Director: S.V.Kozenkov
Secretariat
Finances
Personnel

Scientific Secretary Group
Translation
Graphics
Photography
Artwork

THE CONDENSED MATTER DEPARTMENT

Sub-Division	Title	Head
Diffraction sector. Head: A.M.Balagurov		
Group No.1	HRFD	V.Yu.Pomjakushin
Group No.2	DN-2	A.I.Beskrovnyi
Group No.3	DN-12	B.N.Savenko
Group No.4	NSVR	K.Ullemeyer
Small-angle neutron scattering group. Head: V.I.Gordeliy		
Neutron optics sector. Head: V.L.Aksenov		
Group No.1	SPN-1	Yu.V.Nikitenko
Group No.2	REFLEX	D.A.Korneev
Inelastic scattering group. Head: I.Natkaniec		

THE NUCLEAR PHYSICS DEPARTMENT

Sub-Division	Title	Head
Group No.1	Polarized neutrons and nuclei	Yu.D.Mareev
Group No.1	Neutron spectroscopy	A.B.Popov
Group No.3	Nuclear fission	Sh.S.Zeinalov
Group No.4	Thermal polarized neutrons	M.I.Tsulaya
Group No.5	Proton and α -decay	Yu.M.Gledenov
Group No.6	Properties of γ -quanta	A.M.Sukhovoy
Group No.7	Neutron structure	G.S.Samosvat
Group No.8	Ultra-cold neutrons	V.N.Shvetsov
Group No.9	Neutron optics	A.I.Frank
Group No.10	Neutron activation analysis	M.V.Frontasyeva
Group No.11	Theory	Yu.A.Alexandrov

8.2. USER POLICY

The IBR-2 reactor usually operates 10 cycles a year (2500 hrs. total) to serve the experimental programme. A cycle is established as of 2 weeks of operation for users, followed by a one week period for maintenance and machine development. There is a long shut-down period between the end of June and the middle of October.

All experimental facilities of IBR-2 are open to the general scientific community. The User Guide for neutron experimental facilities at FLNP is available by request from the Laboratory's Scientific Secretary.

Condensed matter studies at IBR-2 have undergone some changes in accordance with the experience gained during the last several years. It was found to be necessary to establish specialized selection committees formed of independent experts in their corresponding fields of scientific activities. The following four committees were organized:

1. <u>Diffraction</u> <i>Chairman - V.A.Somenkov - Russia</i>	3. <u>Neutron optics</u> <i>Chairman - A.I.Okorokov - Russia</i>
2. <u>Inelastic scattering</u> <i>Chairman - J.Janik - Poland</i>	4. <u>Small angle scattering</u> <i>Chairman - L.Cser - Hungary</i>

Dr. Vadim V. Sikolenko, Scientific Secretary of FLNP, is responsible for the user policy. Two deadlines for proposal submission are: May 16 - for the experimental period from October through February; and October 16 - for the period from March through June.

Scientific Secretary is responsible for:

- distribution of "Application for Beam Time" forms to potential users;
- registration of submitted proposals;
- reviewing of the proposals by instrument scientists to estimate the technical feasibility of the proposed experiment;
- sending of the approved proposals to Members of Selection Committees and registration of their comments and recommendations.

The IBR-2 beam schedules are drawn up by the head of the Condensed Matter Department together with instruments responsible on the basis of experts recommendations and are approved by the FLNP Director or Deputy Director for condensed matter physics. The schedules are sent to Chairmen of Selection Committees.

After the completion of experiments, "Experimental Report" forms are filled out by experimenter(s) and submitted to the Scientific Secretary.

The Application Form and other information about FLNP are available by WWW: <http://nfdfn.jinr.ru/~sikolen/usepol.html>

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8.3. MEETINGS AND CONFERENCES

In 1998, FLNP organized the following meetings:

1.	International Seminar «Collective Effects in Condensed Matter»	March 7-15	Pamporovo, Bulgaria
2.	VI International Seminar on Interaction of Neutrons with Nuclei (ISINN-6)	May 13-16	Dubna
3.	International Workshop on Deuteration of Biological Molecules for Structural and Dynamic Studies	May 19-25	Dubna
4.	II International Seminar «Ferroelectrics-Relaxors»	June 23-26	Dubna
5.	VIII School on Neutron Physics	August 30 - September 5	Dubna

VIII School on Neutron Physics

The VIII School on Neutron Physics organized by the Frank Laboratory of Neutron Physics and Lomonosov Moscow State University was held in Dubna from August 30 to September 5, 1998. Neutron Schools are regularly held in Dubna or Alushta from the year 1969. The VIII school was devoted to the 90th birthday of Professor I.M.Frank, the Nobel Prize Winner and first director of FLNP, who established the tradition of conducting such schools. In contrast to previous schools the VIII school was first organized in cooperation with MSU and totally oriented to students and post-graduates. Professor V.L.Aksenov, VIII School Chairman, said in his interview for the Dunba newspaper: "The present school is first organized as a school not a conference, i.e., it implies a complete cycle of educational process. At sessions, leading Russian scientists from many institutes read general lectures in topical problems of condensed matter and nuclear physics, the two directions of the school, and at seminars, students listen to special lectures in neutron methods of investigation of matter using particular experimental techniques. Students are supposed to pass the final test. Unfortunately, we had to restrict the number of participants. The number of applications was 1.5 times larger than the number of students we could invite. Therefore, most of our students had to undergo certain selection at home institutes, Moscow, Ural and other Universities.

Actually, at present, we, as an educational center, are in a new stage of development. For 6 years since the Chair of Condensed Matter Physics of MPEI was organized in Dubna, about 30 of its graduates have joined FLNP. We will continue employing young specialists though nowadays, the focus shifts to training of specialists for other centers – no young scientists are left in Kurchatov Institute, not very many of them are in Gatchina. Our goal is to train groups of specialists for other scientific centers to work with neutrons so that in future they could be users of our experimental facilities. This determined the choice of lecturers for the VIII School, i.e., leading Russian scientists. This School like a link in the chain enters the structure of the State Scientific and Technical Program of neutron investigations in our country which, in turn, is part of international neutron cooperation. The trends of its development are, therefore, obvious."

In spite of the financial disaster that took place in our country just in the period of the School, over 100 people from Russia, Ukraine, Belorussia, Bulgaria, Slovakia participated in the School. In the first half of the day, participants listened to general review lectures by prominent Russian scientists. After lunch, participants attended sections in condensed matter

physics and nuclear physics where they listened to special lectures and did practicals on the spectrometers of the IBR-2 reactors and IBR-30 booster.

VIII School Lectures (in the order of presentation)

General Lectures

Prof. V.L.Aksenov.

Today's neutron-aided investigations

Acad. Yu.A.Ossipyan.

Fullerenes and fullerites

Acad. A.S.Spirin.

Structural and functional organization of the protein synthesizing apparatus

Prof. V.E.Bunakov.

Neutron physics, nuclear models, and quantum chaos

Corr.Memb. RAS S.M.Stishov.

High pressure physics

Csci. M.V.Frontasyeva.

Activation analysis: past, present and future

Corr.Memb RAS Yu.V.Kopaev.

Semiconducting and superconducting heterostructures

Corr. Memb. RAS Yu.G.Abov.

Neutron Optics

Corr.Memb.RAS A.Yu.Rumyantsev.

The Fermi surface of metals and neutron scattering

Csci. V.N.Shvetsov.

Ultracold neutrons and fundamental physics problems

Corr.Memb.RAS Yu.A.Iziumov.

The symmetry of the order parameter in high temperature superconductors

Prof. M.V.Kazarnovskii.

Astrophysical aspects of neutron physics

Acad. Yu.D.Tretyakov.

Methods of the synthesis of new materials

Condensed Matter Physics Section

Prof. I.N. Serdyuk.

The fundamentals of small-angle scattering and its applications for structural biology

Dr. A.V.Belushkin.

Introduction to neutron experimental techniques

Csci. P.A.Alekseev.

Rare earth compounds with strong electron correlation and neutron scattering

Prof. A.M.Balagurov.

Fundamentals of crystallography and neutron structural analysis of crystals

Prof. V.A.Somenkov.

Neutron diffraction: tradition and trends

D.A.Korneev.

Polarized neutrons in condensed matter investigations

Cscie V.B.Zlokazov.

Mathematical methods of data processing: Least Square Method, Rietveld, autoindexing, separation of peaks

Nuclear Physics Section

Prof. L.B.Pikelner.

Neutron spectroscopy

Csci. A.M.Sukhovej.

Neutron radiation capture gamma-cascades

Dr. V.P.Alfimenkov.

Experiments with polarized neutrons and nuclei

Csci. N.A.Gundorin.

Precision gamma-spectroscopy of nuclear fission fragments

Csci. Yu.M.Gledenov, Sh.O.Zeinalov.

Neutron reactions with emission of charges particles

Dr.G.S.Samosvat.

The scattering of neutrons on nuclei and fundamental properties of neutrons

Csci. W.I.Furman.

Resonance neutron induced nuclear fission

Csci. A.V.Strelkov.

Experiments with UCN

In 1999, FLNP will organize the following meetings:

1.	VII International Seminar on Interaction of Neutrons with Nuclei (ISINN-7)	May 25-28	Dubna
2.	II International Seminar on Neutron Scattering at High Pressure (NSHP-II)	September 29-October 2	Dubna

8.4. COOPERATION

List of Visitors from Non-Member States of JINR in 1998

Name	Organization	Country	Dates
M.A.Kilany	NRC, AEA, Cairo	Egypt	01.01-02.06
R.Machrafi	Univ. Mohamed V., Rabat	Marocco	01.01-25.08
A.A.Salman	Al-Farabi Computer Centre, Baghdad	Iraq	01.01-20.10
H.-J.Lauter	ILL, Grenoble	France	21.01-30.01
V.Lauter	ILL, Grenoble	France	21.01-30.01
T.Gutberlet	Univ. Leipzig	Germany	22.01-30.01
H.Barthel	Firme Wacker-Chemie	Germany	26.01-02.02
G.Bruno	University of Ancona	Italy	09.02-16.02
H.Gletly	ILL, Grenoble	France	18.02-20.02
M.Rudalics	J.Kepler Univ., Linz	Austria	23.03-30.04
J.I.Haugland	Univ. of Trondheim	Norway	28.03-15.04
F.Izumi	Nat.Inst. for Res. In Inorg. Mat.	Japan	29.03-31.03
V.Lauter	ILL, Grenoble	France	31.03-11.04
H.-J.Lauter	ILL, Grenoble	France	31.03-11.04
K.Walther	GeoFRZ, Potsdam	Germany	05.04-09.04

A.Frischbutter	GeoFRZ, Potsdam	Germany	05.04-07.04
M.Stalder	Izfp, Dresden	Germany	06.04-15.04
E.Steinnes	Univ. of Trondheim	Norway	24.04-26.04
J.Merta	Univ. of Technol., Helsinki	Finland	11.05-17.05
S.Mrkwiczka	Univ. Freiburg	Germany	11.05-26.05
El-Said M.A. El-Azm	NRC-AEA, Cairo	Egypt	21.05-31.12
Y.Tonghua	IAE, Beijing	China	25.05-06.06
O.Steinsvoll	Inst. for Energiteknikk	Norway	01.06-14.06
M.Stalder	Izfp, Dresden	Germany	01.06-20.06
V.Desjardins	Univ. Rode Island, Kingstown	USA	03.06-14.06
J.S.Desjardins	Univ. Rode Island, Kingstown	USA	03.06-14.06
K.-H.Michel	Univ. of Antwerp	Belgium	06.06-12.06
G.C.Groot			
B.W.Yong	PAL, Pohang Univ.	South Korea	21.06-28.06
K.Guinyun	PAL, Pohang Univ.	South Korea	21.06-24.06
B.Dorner	ILL, Grenoble	France	22.06-27.06
T.Wieder	Univ. Frankfurt	Germany	24.06-26.06
J.Watanabe	Hokkaido Univ.	Japan	27.06-01.07
R.M.A.Maayouf	NRC, AEA, Cairo	Egypt	15.08-05-09
J.Schreiber	Izfp, Dresden	Germany	17.08-20.08
F.Yuasa	Univ. of Kyoto	Japan	19.08-26.08
Y.Tsuruta	Univ. of Kyoto	Japan	19.08-26.08
I.Tetsudzhi	Univ. of Kyoto	Japan	20.08-21.08
I.Kotji	Univ. of Kyoto	Japan	20.08-21.08
I.Teppbei	Univ. of Kyoto	Japan	20.08-21.08
H.Schaeben	TU, Freiburg	Germany	02.09-11.09
M.I.Khalil	NRC, Cairo	Egypt	30.09-30.12
A.Wiedenmann	Univ. Hamburg	Germany	04.10-10.10
K.Walther	GeoFRZ, Potsdam	Germany	05.10-29.10
A.Laid	IAEA, Vienna	Austria	06.10-13.10
M.E.-H.Benazza	IAEA, Vienna	Austria	06.10-13.10
A.Strigazzi	INFN, Torino	Italy	12.10-12.10
P.Perlo	INFN, Torino	Italy	12.10-12.10
K.Moss	Western Texas Univ.	USA	14.10-14.10
W.Kurz	Inst. fuer Geologie, Graz	Austria	18.10-01.11
W.Unzog	Inst. fuer Geologie, Graz	Austria	18.10-01.11
W.Yang	Fermilab, Chicago	USA	22.10-22.10
A.Frischbutter	GeoFRZ Potsdam	Germany	26.10-30.10
J.Schreiber	Izfp, Dresden	Germany	13.11-19.11
H.-J.Lauter	ILL, Grenoble	France	16.11-22.11
V.Lauter	ILL, Grenoble	France	16.11-22.11
G.Klose	Univ. Leipzig	Germany	17.11-22.11

8.5. EDUCATION

The education programme of FLNP based on the chairs of Lomonosov Moscow State University and Moscow Engineering Physics Institute admits, for continuation of studies, undergraduate students of the last two years of study in higher education institutions who have attended introductory specialized courses or lectures in nuclear physics and investigation of condensed matter at nuclear reactors and accelerators. These specializations are in line with research performed in FLNP which has at its disposal a good experimental base for both sectors comprising the IBR-2 reactor and the IBR-30 booster pulsed neutron sources.

The education and training courses for students affiliated with FLNP have been organized, to a large extent, to prepare specialists in neutron physics for both the Laboratory and other Russian neutron centres.

For illustration we present the list of courses taught by lecturers of the Interfaculties Center of Lomonosov Moscow State University «Structure of Matter and New Materials» (Head: Prof. V.L.Aksenov):

- theoretical methods in condensed matter physics
- methods of investigation of condensed matter at nuclear reactors and accelerators
- fundamentals of neutron physics and neutron sources
- methods for structure analysis of ideal and real crystals
- synchrotron radiation spectroscopy of solid matter
- methods of experimental data processing.

A number of leading FLNP scientists take part in delivering these courses. Each student has access to the Laboratory computer network. An obligatory condition for successful completion of the 4th year is the capability to use modern personal computers. Earlier, students were included in research groups led by their instructors. This made it possible for undergraduate students working on their theses to take part in preparing or performing experiments.

In 1998, the teaching process continued successfully. Twelve students who had their training course at FLNP were employed by JINR and other scientific centers in Russia.

The Interfaculties Center gave graduation certificates to its sixth group of students in the reported year. This group had 6 students, making the total number of students who have graduated from the Center, 45. One of them have been employed by FLNP and connected to the young scientists who have renewed the staff of the FLNP Scientific Department of Condensed Matter Physics to a noticeable degree.

8.6. PERSONNEL

Distribution of Personnel per Department as of 01.01.99

Theme	Departments	Main staff
-0974-	Nuclear Physics Department	68.5
-0864-	Condensed Matter Physics Department	45
-1012-	Department of Electronics, Computers and Networks	55.5
-0993-	IREN Department	30
-1007-	Nuclear Safety Sector	19.5
-0851-	IBR-2 Department	48
	Mechanical and Technical Department	60
	Electric and Technical Department	34
	Central Experimental Workshops	44
	Design Bureau	11
	<u>FLNP infrastructure:</u>	
	Directorate	5
	Services and Management Department	23
	Scientific Secretary Group	8
	Staff Management Group	5.5
	Supplies Group	4
Total		461

Personnel of Directorate staff as of 01.01.99

Country	People
Azerbaijan	3
Armenia	1
Bulgaria	4
China	1
Egypt	1
Germany	4
Georgia	2
Kazakhstan	1
Mongolia	4
Morocco	1
Poland	9
Romania	6
Russia	17
Slovakia	1
Ukraine	1
TOTAL	56

8.7. FINANCE

Financing of FLNP Scientific Research Plan in 1998 (th. USD)

No.	Theme	Financing plan, \$ th.	Expenditures for 12 months, \$ th.	In % of FLNP budget
I	Condensed matter physics	4041.1	1940.7	48.0
	-0864-	1972.0	1361.2	69.0
	-0851-	1636.4	263.1	16.1
	-1012-	432.7	316.4	73.1
II	Neutron nuclear physics	1119.9	590.1	52.7
	-0974-	683.2	454.9	66.6
	-0993-	436.7	135.2	31.0
III	Elementary particle physics			
	-1007-	6.1	36.8	603.3
IV	Relativistic nuclear physics			
	-1008-	41.6	9.6	23.1
V	TOTAL:	5208.7	2577.2	49.5