

6. ACADEMIC ACTIVITIES

6.1 BEAM UTILIZATION BY USERS

6.1.1 LEIBF (Positive & Negative Ion) Beam Time Utilization and Experiments performed (April, 2014 to March, 2015)

Users	No. of Shifts used (1 Shift =8Hrs.)	Project in	
		Materials Science	Atomic Physics
A. Universities/Colleges			
Acharya Nagarjuna University, Andhra Pradesh	12	1	
Alagappa University, Karaikudi	6	1	
Amity University, Noida	6	1	
Amrita Vishwa Vidyapeetham Bengaluru	6	1	
AFM/XPS Laboratory, Bhubaneswar	6	1	
Bangabasi Morning College (BMC), Kolkata	6	1	
Delhi University (DU), Delhi	12	2	
Hyderabad University, Hyderabad	12	2	
Kalindi College, New Delhi	6	1	
KIIT University, Bhubneshwar	6	1	
Madurai Kamaraj University, Madurai	6	1	
Mumbai University, Mumbai	6	1	
Sabancı University, Turkey	6	1	
Shiv Nadar University, Budh Nagar	12	1	
University of Calcutta, Kolkata	6	1	
B. Institutions			
Indian Institute of Technology (IIT), Delhi	30	5	
Indian Institute of Technology (IIT), Mumbai	6	1	
Indian Institute of Technology (IIT), Roorkee	6	1	
Inter-University Accelerator Centre (IUAC), New Delhi	37	4	
Malaviya National Institute of Technology (MNIT), Jaipur	12	1	
Solid State Physics Laboratory (SSPL), Delhi	6	1	
SUNAG Laboratory, Odisha	24	1	
V.P.M's Polytechnic, Maharashtra	6	1	
C. Facility Tests	24	1	1
TOTAL	265	33	1

6.1.2 Pelletron Beam Time Utilization and Experiments performed (April, 2014 to March, 2015)

Users	No. of Shifts used (1 Shift =8Hrs.)	Project in				
		Nuclear Physics	Materials Science	Radiation Biology	Atomic Physics	AMS
A. Universities/Colleges						
Alagappa University, Karaikudi	3		1			
Aligarh Muslim University (AMU), Aligarh	48	3	1			
Allahabad University, Allahabad	3		1			
Anna University, Chennai	11		4			
Bangalore University, Bangalore	3		1			
Delhi Technological University (DTU), Delhi	6		2			
Delhi University (DU), Delhi	52	3	2			
Devi Ahilya University (DAU), Indore	6		2			
Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	7		2			
Gauhati University, Assam	18	1				
Gujarat University, Ahmedabad	3		1			
Guru Gobind Singh Indraprastha University (GGSIPU), Delhi	2		1			
Guru Nanak Dev University (GNDU), Amritsar	2		1			
G.B.Pant Univ. of Ag. & Tech., Pantnagar	3		1			
Hemwati Nandan Bahuguna Garhwal University, Garhwal	6		2			
Himachal Pradesh University (HPU), Shimla	3		1			
Hyderabad University, Hyderabad	6		2			
Jamia Milia Islamia (JMI), New Delhi	6		2			
KIIT University, Bhubneshwar	2		1			
Lalbaba College, Kolkata	12	1				
Maharishi Dayanand Univ. (MDU), Rohtak	2		1			
MRI University, Faridabad	3		1			
Mumbai University, Mumbai	3		1			
Osaka University, Japan	3		1			
Panjab University (PU), Chandigarh	50	2	1			
Saint Petersburg Polytechnic University, Russia	3		1			

Users	No. of Shifts used (1 Shift =8Hrs.)	Project in				
		Nuclear Physics	Materials Science	Radiation Biology	Atomic Physics	AMS
Saurashtra University, Rajkot	3		1			
Sri Krishnadevaraya University (SKU), Anantpur	6		2			
Tezpur University, Tezpur (Assam)	6		2			
The Maharaja Sayajirao University of Baroda (MSU), Vadodara	5		2			
University of Calcutta, Kolkata	15	1				
University of Pune, Pune	2		1			
B. Institutions						
Amrita School of Engineering (ASE), Bangalore	3		1			
Bhabha Atomic Research Centre (BARC), Mumbai	7		2			
Flerov Laboratory of Nuclear Reactions (FLNR), Russia	18	1				
Guru Nanak Girls College (GNGC), Ludhiana	30	1				
Indian Institute of Information Technology (IIIT), Allahabad	3		1			
Indian Institute of Technology (IIT), Rajasthan	3		1			
Indian Institute of Technology (IIT), Roorkee	5		1			
Indian School of Mines (ISM), Dhanbad	6		2			
Institute for Plasma Research (IPR), Gandhinagar	9		2			
Inter-University Accelerator Centre (IUAC), New Delhi	137	5	6	2	1	
Indian Space Research Organisation, Bangalore	7	1				
Malaviya National Institute of Technology (MNIT), Jaipur	8		2			
National Institute of Technology (NIT), Srinagar	6		2			
Physical Research Laboratory (PRL), Ahmedabad	6	1				
Variable Energy Cyclotron Centre (VECC), Kolkata	18	1				
C. Facility Tests						
	12	1	2			
TOTAL	581	22	64	2	1	

6.1.3 List of Users Family

The following list includes Universities/Colleges/Institutions that have used the IUAC Pelletron facility (once or more) since 1991.

(A) UNIVERSITIES - (105)

1.	Acharya Nagarjuna University	Andhra Pradesh
2.	Alagappa University	Karaikudi
3.	Aligarh Muslim University	Aligarh
4.	Amity University	Noida
5.	Andhra University	Waltair
6.	Anna University	Chennai
7.	Assam University	Silchar
8.	Babasaheb Bhimrao Ambedkar University	Lucknow
9.	Banaras Hindu University	Varanasi
10.	Bangalore University	Bangalore
11.	Berhampur University	Berhampur
12.	Bharathiar University	Coimbatore
13.	Bharathidasan University	Tiruchirappalli
14.	Bhavnagar University	Bhavnagar
15.	Calicut University	Calicut
16.	Central University of Jharkhand	Ranchi
17.	Central University of Kerala	Kerala
18.	Central University of Rajasthan	Rajasthan
19.	Chaudhary Charan Singh University	Meerut
20.	Cochin University of Science & Technology	Cochin
21.	Delhi Technological University	Delhi
22.	Devi Ahilya University	Indore
23.	Dr. Babasaheb Ambedkar Marathwada University	Aurangabad
24.	Dr. B.R. Ambedkar Univ. (Agra University)	Agra
25.	Gauhati University	Guwahati

26.	Goa University	Goa
27.	Govind Ballabh Pant University of Agriculture and Technology	Pantnagar
28.	Gujarat University	Ahmedabad
29.	Gulbarga University	Gulbarga
30.	Guru Ghasidas Vishwavidyalaya	Bilaspur
31.	Guru Gobind Singh Indraprastha University	New Delhi
32.	Guru Jambheshwar University of Science & Technology	Hisar
33.	Guru Nanak Dev University	Amritsar
34.	Hemwati Nandan Bahuguna Garhwal University	Srinagar, Garhwal
35.	Himachal Pradesh University	Simla
36.	Indira Gandhi National Open University	New Delhi
37.	Jamia Millia Islamia University	New Delhi
38.	Jawaharlal Nehru University	Delhi
39.	Jai Prakash Vishwavidyalaya	Chapra
40.	Karnataka University	Dharwad
41.	Kiel University	Germany
42.	Kurukshetra University	Kurukshetra
43.	Kuvempu University	Shankaraghatta, Shimoga
44.	Ludwig-Maximilians-Universität München	Germany
45.	Madurai Kamaraj University	Madurai
46.	Maharshi Dayanand University	Rohtak
47.	Maharishi Markandeshwar University	Ambala
48.	Mahatma Gandhi University	Kottayam
49.	Mahatma Jyotiba Phule Rohilkhand University	Bareilly
50.	Manav Rachna International University	Faridabad
51.	Mangalore University	Mangalore
52.	Manipur University	Imphal
53.	Manonmaniam Sundaranar University	Tirunelveli
54.	Mohanlal Sukhadia University	Udaipur

55.	Rashtrasant Tukadoji Maharaj Nagpur University	Nagpur
56.	North Carolina State University	USA
57.	North Eastern Hill University	Shillong
58.	North Maharashtra University	Jalgaon
59.	North Orissa University	Baripada
60.	Osaka University	Japan
61.	Osmania University	Hyderabad
62.	Panjab University	Chandigarh
63.	Patna University	Patna
64.	Periyar University	Chennai
65.	Pondicherry University	Pondicherry
66.	Punjab Agricultural University	Ludhiana
67.	Punjabi University	Patiala
68.	P.E.S. Institute of Technology	Bangalore
69.	Rani Durgavati Vishwavidyalaya	Jabalpur
70.	Sabancı University	Turkey
71.	Saint Petersburg Polytechnic University	Russia
72.	Saurashtra University	Rajkot
73.	Sharda University	Noida
74.	Shivaji University	Kolhapur
75.	Shiv Nadar University	Uttar Pradash
76.	Shri Mata Vaishno Devi University	Katra
77.	Sri Krishnadevaraya University	Anantapur
78.	Technische Universität Darmstadt	Darmstadt, Germany
79.	Tezpur University	Tezpur
80.	The Maharaja Sayajirao University of Baroda	Vadodara
81.	The University of Burdwan	Burdwan
82.	Tilka Manjhi Bhagalpur University	Bhagalpur
83.	Tumkur University	Tumkur

84.	University and Petroleum & Energy Studies	Dehradun
85.	University of Allahabad	Allahabad
86.	University of Calcutta	Kolkata
87.	University of Delhi	Delhi
88.	University of Hyderabad	Hyderabad
89.	University of Jammu	Jammu
90.	University of Kalyani	Kalyani
91.	University of Kashmir	Srinagar
92.	University at Lucknow	Lucknow
93.	University of Madras	Chennai
94.	University of Maryland	Maryland, USA
95.	University of Mumbai	Mumbai
96.	University of Mysore	Mysore
97.	University of Notre Dame	Notre Dame, USA
98.	University of Padova	Italy
99.	University of Pune	Pune
100.	University of Rajasthan	Jaipur
101.	University of Stuttgart	Germany
102.	Utkal University	Bhubaneswar
103.	Vikram University	Ujjain
104.	Vishwa Bharti University	Bolpur
105.	West Bengal University of Technology	Kolkata

(B) COLLEGES - (61)

1.	Ananda Mohan College	Kolkata
2.	Armed Forces Medical College	Pune
3.	Bareilly College	Bareilly
4.	Beant College of Engineering & Technology	Gurdaspur

5.	Bharatiya Jain Sanghatana College	Pune
6.	Bhiwandi College	Mumbai
7.	B.N.N. College	Bhiwandi
8.	College of Engineering and Technology	Aligarh
9.	Doodhsakhar Mahavidyalaya	Bidri, Maharashtra
10.	D.A.V. College	Jalandhar
11.	D.A.V. College	Kanpur
12.	D.A.V. College	Mumbai
13.	D.B.S. College	Dehradun
14.	Ewing Christian College	Allahabad
15.	Govt. Art College	Rajahmundry, AP
16.	Govt. College	Ajmer
17.	Govt. College	Kota
18.	Govt. College	Mahendragarh, Haryana
19.	Govt. M.S.J. College	Bharatpur
20.	Goalpara College	Goalpara, Assam
21.	Gurudas College	Kolkata
22.	Guru Nanak Girls College	Ludhiana (PNJ)
23.	G.F.(PG) College	Shahjahanpur
24.	Iswar Chandra Vidyasagar College (formerly Belonia College)	Belonia, Tripura
25.	Jai Hind College	Mumbai
26.	Kalindi College	New Delhi
27.	Kandi Raj College	Murshidabad, (WB)
28.	Kishinchand Chellaram College	Mumbai
29.	Kongunadu Arts & Science College	Coimbatore
30.	Koshi College	Khagaria, Bihar
31.	Krishnath College	West Bengal
32.	K.J. Somaiya College of Science & Commerce	Mumbai
33.	KIIT University	Bhubaneswar

34.	Lalbaba College	Kolkata
35.	Mahila Degree College	Lucknow
36.	Marwari College	Ranchi
37.	M.M.H. College	Ghaziabad
38.	M.R. College	Vizianagaram (AP)
39.	Nayagarh College	Nayagarh
40.	Nizam College	Hyderabad
41.	N.S.A.M. College	Mangalore
42.	Orissa Univ. of Agriculture & Tech.	Bhubaneswar
43.	Poorna Prajna College	Udupi, Karnataka
44.	Punjab Engineering College	Chandigarh
45.	R.B.S. College	Agra
46.	R.D.&D.J. College	Munger, Bihar
47.	R.P.G. College	Ratnagiri
48.	School of Physical Sciences	JNU, New Delhi
49.	School of Physical Sciences	Nanded, Maharashtra
50.	School of Tech. & Applied Sciences	Kottayam, Kerala
51.	Smt. Chandibai Himathmal Mansukhani College	Ulhasnagar, Maharashtra
52.	Sharanabasaveshwar College of Science	Gulbarga
53.	Sri Bhuvanendra College	Karkala
54.	St. Edmunds College	Shillong
55.	Swami Shraddhanand College	New Delhi
56.	SDM College	Ujire, Mysore
57.	S.N. College	Kollam
58.	S.V. College	Aligarh
59.	University College	Kuruksheetra
60.	University College of Science & Tech.	Kolkata
61.	Vaish College	Rohtak

(C) OTHER INSTITUTIONS – (89)

1.	Amity School of Engineering	New Delhi
2.	Amity Institute of Nanotechnology	Noida
3.	Amrita Vishwa Vidyapeetham	Bangaluru
4.	Amrita School of Engineering	Bangalore
5.	AFM/XPS Laboratory	Bhubaneswar
6.	AICTE	New Delhi
7.	AIIMS	New Delhi
8.	Bangabasi Morning College	Kolkata
9.	Bhabha Atomic Research Centre	Mumbai
10.	Centre for Superconductivity research	USA
11.	C.E.E.R.I.	Pilani
12.	CAT	Indore
13.	CCMB	Hyderabad
14.	CSNSM, Orsay Cedex	France
15.	Dayalbagh Educational Institute	Agra
16.	Defence Laboratory	Jodhpur
17.	Defence Research & Development Organ.	Dehradun
18.	Dr. B.R. Ambedkar National Institutes of Technology	Jalandhar
19.	D.M.R.L.	Hyderabad
20.	Flerov Laboratory of Nuclear Reactions	Russia
21.	Genetic Institute of Manufacturing Technology	Singapore
22.	GSI	Germany
23.	Harcourt Butler Technological Institute	Kanpur
24.	Homi Bhabha National Institute	Kolkata
25.	ICGEB	New Delhi
26.	IISER	Kolkata
27.	I.G.C.A.R.	Kalpakkam
28.	Indian Institute of Information Technology	Allahabad
29.	Indian Institute of Science	Bangalore

30.	Indian Institute of Technology-BHU	Varanasi
31.	Indian Institute of Technology	Chennai
32.	Indian Institute of Technology	Kanpur
33.	Indian Institute of Technology	Kharagpur
34.	Indian Institute of Technology	Mumbai
35.	Indian Institute of Technology	New Delhi
36.	Indian Institute of Technology	Rajasthan
37.	Indian Institute of Technology	Roorkee
38.	Indian School of Mines	Dhanbad
39.	Indian Space Research Organisation	Bangalore
40.	Institute for Plasma Research	Gandhinagar
41.	Institute of Basic Sciences	Agra
42.	Institute of Materials Science	Bhubaneswar
43.	Institute of Physics	Bhubaneswar
44.	Institute of Science	Mumbai
45.	International Centre for Genetic Engineering and Biotechnology	New Delhi
46.	INFN-LEGNARO	Italy
47.	INMAS	New Delhi
48.	IUC-DAEF, Calcutta Centre	Kolkata
49.	IUC-DAEF, Indore Centre	Indore
50.	Jaypee Institute of Information Technology	Noida
51.	Joint Inst. of Nuclear Research	Dubna, Russia
52.	Malaviya National Institute of Technology	Jaipur
53.	Massachusetts Inst. of Technology	USA
54.	Maulana Azad National Inst. of Technology	Bhopal
55.	Ministry of Defence (R & D Orgn)	Delhi
56.	Motilal Nehru National Institute of Technology	Allahabad
57.	Nanocrystals Technology	USA
58.	National Academy of Science	Allahabad
59.	National Institute of Material Sciences	Japan

60.	National Institute of Oceanography	Goa
61.	National Institute of Technology, Hamirpur	Himachal Pradesh
62.	National Institute of Technology	Jalandhar
63.	National Institute of Technology	Kurukshetra
64.	National Institute of Technology	Rourkela
65.	National Institute of Technology	Silchar
66.	National Institute of Technology	Srinagar
67.	National Institute of Technology	Tiruchirapalli
68.	National Physical Laboratory	New Delhi
69.	NCAOR	Goa
70.	NCCCM/BARC	Hyderabad
71.	NISER	Bhubaneswar
72.	NCSR	France
73.	Oak Ridge National Laboratory	USA
74.	Physical Research Laboratory	Ahmedabad
75.	Research Centre Imarat (RCI), DRDO	Hyderabad
76.	Saha Institute of Nuclear Physics	Kolkata
77.	Sant Longowal Institute of Engineering & Technology	Sangrur
78.	Solid State Physics Laboratory	Delhi
79.	SSPL	New Delhi
80.	SUNAG Laboratory	Odisha
81.	Tata Institute of Fundamental Research	Mumbai
82.	Thapar Inst. of Engg. & Technology	Patiala
83.	UGC-DAE-CSR	Indore
84.	UGC-DAE-CSR	Kolkata
85.	UM-DAC Centre for Excellence in Basic Sciences	Mumbai
86.	Variable Energy Cyclotron Centre	Kolkata
87.	Visva-Bharati	Santiniketan
88.	V.P.M's Polytechnic	Maharashtra
89.	Wadia Institute of Himalayan Geology	Dehradun

6.2 STUDENT PROGRAMMES

6.2.1 Summer Project for B.Sc. (Physics) Students

P.N.Prakash, A.M.Mandal and P.Sugathan

The Summer Project for B.Sc. (Physics) students was held at IUAC from 27th May to 24th June, 2014. Nine students from different regions of the country and five students from Delhi region were invited to carry out projects under the supervision of an IUAC scientist. The list of students, their affiliation, supervisor's name and project title are given in table 1. At the end of the program, each student gave a short ten minute presentation briefly outlining the work carried out during the course of the stay. In addition to the project work, four special lectures were delivered by eminent scientists covering various areas of ion-beam based research and accelerator physics. A lab tour was also organized to provide the students an opportunity to see the various accelerators and experimental facilities at IUAC. The students participated in the project with enthusiasm and felt motivated after getting to experience a flavour of how research work is conducted.

Table 1: List of students, their affiliation, supervisor and project title, invited to IUAC for the Summer Project for B.Sc. (Physics) students program

S.No.	Name & Affiliation of Students	Supervisor	Project Title
1.	Mr. Kundrapu Dilip Kumar Aditya Degree College Visakhapatnam	Mr. Rajesh Vikram Hariwal	Current & beam profile measurements of N^{2+} ion beam in LEIBF
2.	Ms. Shiti Handa Kirori Mal College, Delhi	Mr. Sunil Ojha	Rutherford backscattering of implanted materials
3.	Ms. Preeti Miranda House, Delhi	Dr. D. Kabiraj	Study of recrystallization of predamaged Ge by c-RBS
4.	Ms. Chanchal Devi Panjab University, Chandigarh	Dr. S.P. Lochab	Synthesis of nanocrystalline thermoluminescence phosphors and contouring of radiation dose levels inside gamma chamber exposure volume
5.	Mr. Mayank Narang Sri Venkateswara College New Delhi	Dr. A. Mandal	Testing of quadrupole magnets
6.	Mr. Abhishek Nag IISER Kolkata, Mohanpur	Mr. G.O. Rodrigues	Studies on a 2.45 GHz microwave ion source

S.No.	Name & Affiliation of Students	Supervisor	Project Title
7.	Mr. Puneet Chopra Deshbandhu College New Delhi	Dr. Ambuj Tripathi	Preparation of Graphene by mechanical exfoliation and characterization with optical and scanning electron microscope
8.	Ms. Deepti Central University of Jharkhand, Ranchi	Dr. Fouran Singh	Photoluminescence studies of materials for laser applications
9.	Ms. Shubhi Sharma The IIS University, Jaipur	Mrs. Devrani Devi	Study of negative ion SNICS source
10.	Ms. Parul Gupta Hindu College, Delhi	Mr. Akhil Jhingan	Basic detector instrumentation for nuclear reaction experiments
11.	Ms. Mahasweta Bagchi St. Stephen's College, Delhi	Dr. P.K. Kulriya	Nanocomposite materials for Hydrogen gas sensor
12.	Mr. Sundaresan RKM Vivekananda College, Chennai	Dr. R.P. Singh	Interaction of Gamma rays with matter
13.	Ms. Arunika Sahu NIT, Rourkela	Mrs. Indra Sulaniya	Techniques of microscopy and its evolution with time
14.	Ms. Anisha Guru Nanak Dev University, Amritsar	Mr. Saneesh	Neutron - Gamma discrimination techniques

6.2.2 M. Sc. Orientation Programme

R Mehta

Inter-University Accelerator Centre (IUAC) conducts M. Sc. Orientation Programme to encourage interested students to supplement their knowledge and to motivate them to continue their career in science. This programme has been envisaged to provide hands-on training in fields associated with accelerator / ion beam based research to selected M. Sc. students by way of short projects. However, this programme is not conducted to satisfy the M. Sc. credit requirements of any University / Department.

The duration of M. Sc. Orientation programme is three weeks. It is open throughout the year. Student can apply for this programme based on their convenient time. This flexibility allows the students to choose the project period without hampering their main study course. We try to plan the project period as desired by the student but in case we are unable to do so we suggest suitable dates of the project.

This year 13 students participated in this programme.

S.No.	Name	Affiliation
1	Mr. Ajay Kumar	M L S M College, HP
1	Mr. Balwant	MNIT, Jaipur
2	Mr. Nakul	MNIT, Jaipur
3	Mr. Somen Gope	Gauhati University
4	Mr. Bhera Ram Tak	MNIT, Jaipur
5	Ms. Swati Kumari	DAV College, Kanpur
6	Ms. Shilpa Taneja	Banasthali University
7	Ms. Vidya Arora	Banasthali University
8	Ms. Navdeep Kaur	GNDU, Amritsar
9	Mr. Mohit Goel	Bareilly College
10	Mr. Sanjeev Singh	Bareilly College
11	Mr. R R Sughan Harrish	Sathyabhama Univ. Chennai
12	Ms Mona Khera	IIS University, Jaipur
13	Ms. Yakshesh Swami	IIS University, Jaipur

Details of this programme can be accessed at: <http://www.iuac.res.in/events/msco.htm>

6.2.3 PhD TEACHING PROGRAMME

A.M. Mandal and P.N. Prakash

The two semester Ph.D teaching programme for research students of IUAC, research students from other universities in India and for new trainee scientists of IUAC, continued to run well during this year. Overwhelming response from different universities indicates the benefits of the programme to the community of students starting fresh research at different universities throughout the country. The programme consists of two semesters- one during January-May in which courses on Experimental Physics and Accelerator Physics are offered, and the second during August-December in which courses on computers in instrumentation & data acquisition and advanced courses in materials science and nuclear physics are offered. Each course consists of five modules. Each module consists of 8 lectures of one and half hour duration and 1.0 credit is awarded. In addition a course on Engineering Drawing is also offered as a part of the Experimental Physics module to give some basic understanding about engineering drawing.

One month before the semester commences, a poster containing details of the course modules is printed and circulated to the physics departments of various universities and colleges for inviting applications to

attend the course module/s. The poster is also made available on the IUAC website. Accommodation and TA/DA are provided to the selected participants.

6.2.4 Teaching Laboratory Activities

B. P. Ajithkumar and V.V.V. Satyanarayana

This laboratory was established for developing low-cost laboratory equipment for teaching science at the university level and also for training teachers in this regard. A computer interface device, named expEPES Junior, capable of performing number of science experiments has been developed and made commercially available, under PHOENIX (Physics with Home-made Equipment and Innovative Experiments) project. Design of expEYES combines the real-time measurement capability of micro-controllers with the ease and flexibility of Python programming language for data analysis and visualization. It also functions as test equipment for electronics hobbyists and engineering students. Software for all products from PHOENIX is distributed under GNU General Public License. The hardware designs are open and royalty-free commercial production is allowed. To popularize the expEYES junior kit and other equipment developed in this lab, we conduct workshops & training programs targeting physics/engineering teachers from universities and colleges. This year we conducted two 'six days training programs' at IUAC, one 'three days training program' at Central University of Himachal Pradesh and sixteen 'one day training programs' at various colleges across the country.

Apart from expEYES junior kit, we have developed a few equipment like Gamma-ray Spectroscopy, Alpha-ray Spectroscopy and USB based Multi Channel Analyzer.

6.2.4.1 NaI + PMT Gamma-Ray Spectroscopy System

S. Venkataramanan and B. P. Ajithkumar

A Gamma ray spectroscopy system based on indigenously available NaI (1" x 1") and 1.5" photomultiplier tube (PMT) unit from M/s. Saint-Gobain Crystals, has been developed. The unit consists of well-regulated high voltage bias power supply (0.1%), PMT bias resistor network, charge sensitive preamplifier, base line corrected, semi-Gaussian spectroscopy amplifier as shown in the block diagram. A Gaussian pulse with amplitude ranging from zero to five volts is generated for every gamma ray input. The unit is characterized with 'Phoenix MCA', and energy spectrum obtained for gamma source ^{137}Cs is shown in the figure. Typical resolution obtained with various gamma radiation sources is ~6%. This unit requires an external +12V dc power supply.

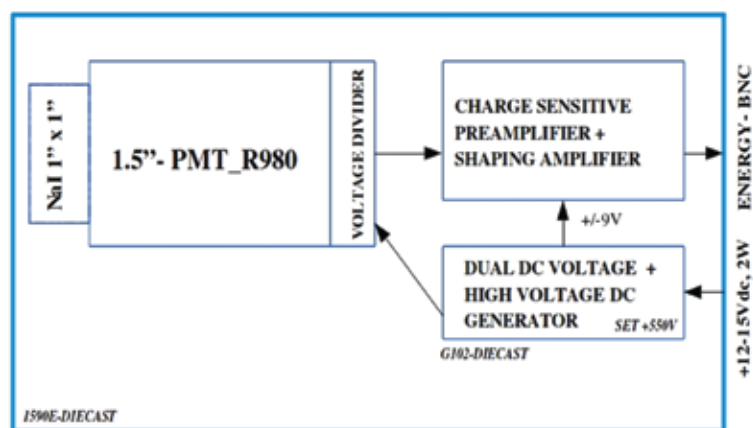


Fig-1 Block diagram

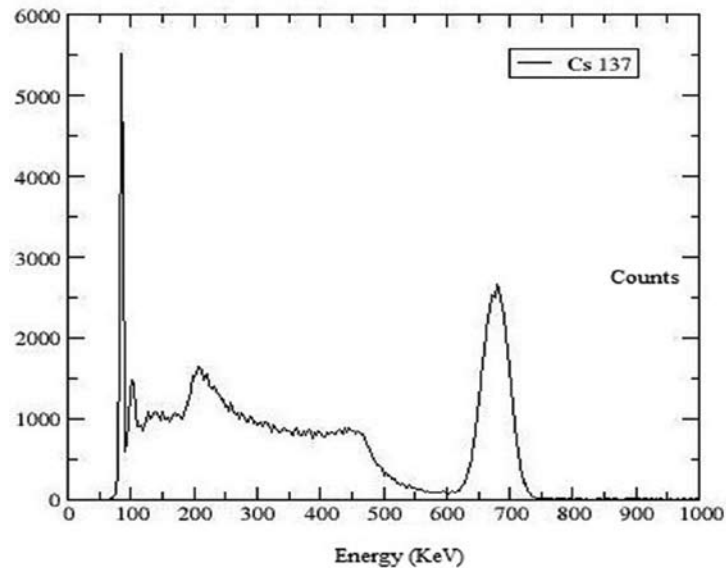


Fig-2 Typical energy spectrum

6.2.4.2 Alpha Particle Detection & Pulse Processing System

V.V.V. Satyanarayana and B. P. Ajithkumar

Pulse processing electronics for Phoenix based MCA has been designed. A PN junction is used for alpha particle detection. The required signal processing electronics (Pre-amplifier and shaping amplifier) has been packaged in to a 5.2" x 4.2" x 1" metal box. The digitization and the PC interfacing is done by the 'Phoenix MCA'.

We have tried to use a one sq.cm area junction, a solar cell, brought from Silicon Sensors, USA, as an alpha particle detector. The output of the detector is given to charge-sensitive pre-amplifier which is having gain of 44mV/MeV with a rise and fall times are of 5ns and 100 μ s respectively. The pre-amplifier output is given to the shaping amplifier which consists of a differentiator followed by a second-order active integrator to get a near Gaussian pulse shape. Pole-zero compensation has been taken care. The peak height of the final output is proportional to the alpha particle energy collected by the detector and it need to be digitized using a MCA. The circuit is mounted on the bottom plate of a small vacuum chamber.



Fig-3 Alpha Particle Detector & Pulse Processing System

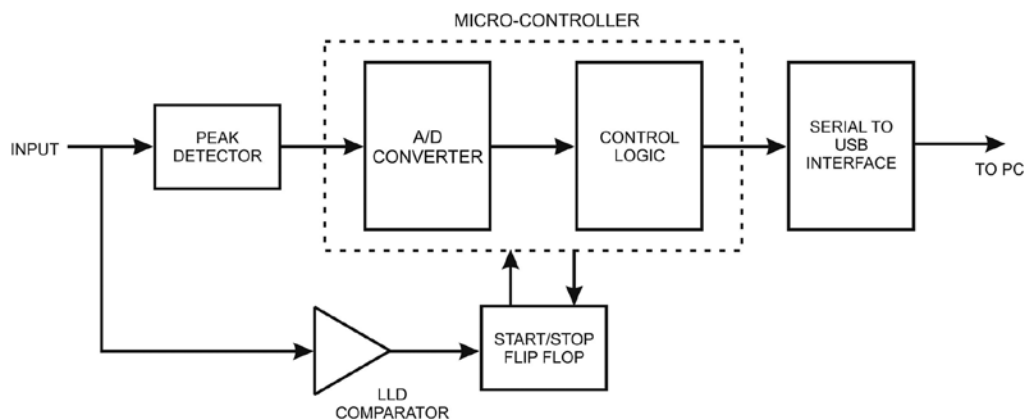


Fig-4 Block diagram of Phoenix MCA

6.2.4.3 Multi Channel Analyzer using PHOENIX

B. P. Ajithkumar and V.V.V. Satyanarayana

A multi-channel analyzer, Phoenix MCA, for making a histogram of pulse inputs ranging from zero to five volts has been developed. Every input pulse is digitized and the output used for incrementing the corresponding channel number. Energy spectrum is a histogram showing Energy on x-axis and the number of charged particles or gamma rays received at every energy on the y-axis. This MCA circuit consists of a Peak detector, analog to digital converter, conversion logic and USB interface wired in a single printed circuit board. The 512 channel MCA is 4.5" x 2.6" x 1.1" in size and is powered by the USB port of PC.

6.3 LIBRARY

Priyambada Nayak

Salient features

Working hours:

Round the clock, all days of the week

Total Books:

~2875 (broadly covering the subjects Nuclear Physics, Materials Science, Nanotechnology, Electronics, Computer Science, Radiobiology, Radiation Physics, Vacuum Instrumentation, Cryogenics, Atomic Physics, Mathematical Physics, Quantum Mechanics, Astrophysics etc.)

Current Journals:

52

E-Journals:

> 2500

Bound Journals:

~8500

Laboratory Reports:

~900 (from nearly 50 labs)

Reprints/Photocopies:	~700
Newsletters, House magazines etc.	50
Databooks, Manuals etc.:	~550
Ph.D. Thesis:	160
Clientele:	Apart from IUAC staff and students, the library is consulted by students, teaching and research staff from over 100 academic and research institutions in different parts of the country.

The technical reports and technical memos of various projects carried out at IUAC are also compiled and kept in the library for reference purpose. Web-based OPAC and library cataloging software package “KOHA” has been installed for the computerization of library documents. Apart from the print journals, online journals & archives are also being subscribed by the library. “Turn-it-in”, the originality check software is being used to prevent plagiarism. The library is a member of UGC-INFONET, INDEST-AICTE Consortium and more than 2500 journals are being accessed on-line through these facilities. The library is open round the clock. Hence, automatic monitoring system has been installed.

6.4 ACADEMIC ACTIVITIES HELD IN 2014-15

21-26 April, 2014	School on Nuclear Structure Physics (Contact Person : S. Muralithar)
28 April-3 May, 2014	Workshop on Innovative Experiments (Contact Person : Ajith Kumar B.P/V.V.V. Satyanarayana)
5-6 May, 2014	Workshop on High Performance Computing (Contact Person : S. Mookherjee)
12-23 May, 2014	School on Accelerator Physics (Contact Person : Rajeev Mehta)
27 May, 2014	Summer Programme for B.Sc. Physics Students (Contact Person : P.N. Prakash)
24 June, 2014	Acquaintance Programme at Kashmir University (Contact Person : R.P. Singh)
5-7 July, 2014	Users Workshop

8 July, 2014	56th AUC Meeting
19 July, 2014	Acquaintance Programme at Ahmedabad (Contact Person : S. Muralithar)
19 August, 2014	Ph.D Programme, Fall Semester Starts (Contact Person : A. Mandal)
20-22 August , 2014	IUAC Academic Workshop (Contact Person : P. Sugathan)
8-13 October, 2014	International School on Ion Beams in Material Science (Contact Person : A. Tripathi)
14-17 October, 2014	International Conference on SHIMEC (Contact Person : D.K. Avasthi)
27-31 October, 2014	Workshop on Innovative Experiments (Contact Person : Ajith Kumar B.P./V.V.V. Satyanarayana)
18 November, 2014	Acquaintance Programme at VTU, Belgaoun (Contact Person : K. Asokan)
16-18 December, 2014	Users Workshop
19 December, 2014	Foundation Day & 57th AUC Meeting
19 January, 2015	Ph.D Programme: Spring Semester starts (Contact Persons: A. Mandal / P.N. Prakash)
16-18 February, 2015	Indo-Japan School on Advanced Accelerators for Ions & Electrons (Contact Person: S. Ghosh)
28 February, 2015	National Science Day (Contact Person: Indra Sulaniya)

- 3 March, 2015 **Acquaintance Programme at Devi Ahilya University, Indore**
(Contact Person: P.N. Prakash)
- 9-10 March, 2015 **IUAC Academic Workshop**
(Contact Person: P. Sugathan)
- 11-13 March, 2015 **Workshop on High Performance Computing**
(Contact Person: S. Mookherjee)

6.5 FORTHCOMING EVENTS: 2015

- 27 April-2 May, 2015 **Workshop on Innovative Experiments**
(Contact Persons: Ajith Kumar B. P / V. V. V. Satyanarayana)
- 1 May, 2015 **Acquaintance Programme at Dr. Babasaheb Ambedkar Marathwada**
University, Aurangabad (Contact Person: Fouran Singh)
- 1 June, 2015 **Summer Programme for B.Sc.(Physics) Students**
(Contact Person: P. Sugathan)
- 5-7 July, 2015 **Users Workshop**
- 8 July, 2015 **58th AUC Meeting**
- 17 August, 2015 **Ph.D Programme: Fall Semester starts**
(Contact Persons: A. Mandal / P.N. Prakash)
- 19-21 August, 2015 **IUAC Academic Workshop**
(Contact Person: P. Sugathan)
- 7-11 September, 2015 **School on Nuclear Reactions**
(Contact Persons: N. Madhavan / P. Sugathan)
- 14-15 September, 2015 **Workshop on Recent Trends in Nuclear Physics**
(Contact Persons: S. Muralithar / N. Madhavan)

21-26 September, 2015	Workshop on Innovative Experiments (Contact Persons: Ajith Kumar B.P. / V. V. V. Satyanarayana)
9 October, 2015	Acquaintance Programme at Acharya Nagarjuna University, Guntur (Contact Person: C.P. Safvan)
25-26 October, 2015	Pre-conference International School - Simulations: Ion beam Effects in Materials (Contact Person: Sumit Mookherjee)
27-31 October, 2015	18th International conference on “Radiation Effects in Insulators”, to be held in Jaipur (Contact Person: D.K. Avasthi)
3-4 November, 2015	Workshop on Low Energy Ion Beam Facility of IUAC (Contact Person: S. Chopra)
9 November, 2015	Acquaintance Programme at Gauhati University, Guwahati (Contact Person: N. Madhavan)
22-25 November, 2015	International Conference on “Nanostructuring by Ion Beams”, to be held in Agra (Contact Person: A. Tripathi)
17-18 December, 2015	Users Workshop
19 December, 2015	Foundation Day & 59th AUC Meeting

6.6 LIST OF PH.D AWARDEES

The list of Ph.D awardee during 2014-15:

The following persons have been awarded Ph.D degree from Jawaharlal Nehru University.

- **Shammi Verma** : Study of the Properties of Metal-Semiconductor Schottky Interfaces under Intense Radiation Environments.
- **Harminder Kaur**: Enhancement in radiosensitivity following internalization of glucose capped gold nanoparticles in Hela Cells.

6.7 LIST OF PUBLICATIONS IN THE YEAR 2014-15

A. NUCLEAR PHYSICS

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2. **Experimental study of cross sections in the $^{12}\text{C}+^{27}\text{Al}$ system at $\approx 3\text{-}7$ MeV/nucleon relevant to the incomplete fusion process**, M. K. Sharma, A. Yadav, V. R. Sharma, D. P. Singh, P. P. Singh, Unnati, I. Bala, R. Kumar, B. P. Singh and R. Prasad, Phys. Rev. C 91, 024608 (2015).
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4. **Systematic study of pre-equilibrium emission at low energies in ^{12}C - and ^{16}O -induced reactions**, M. K. Sharma, P. P. Singh, D. P. Singh, A. Yadav, V. R. Sharma, I. Bala, R. Kumar, Unnati, B. P. Singh and R. Prasad, Phys. Rev. C 91, 014603 (2015).
5. **$T_z = -1 \rightarrow 0$ β decays of ^{54}Ni , ^{50}Fe , ^{46}Cr , and ^{42}Ti and comparison with mirror ($^3\text{He}, t$) measurements**, F. Molina, B. Rubio, Y. Fujita, W. Gelletly, J. Agramunt, A. Algora, J. Benlliure, P. Boutachkov, L. Caceres, R. B. Cakirli, E. Casarejos, C. Domingo-Pardo, P. Doornenbal, A. Gadea, E. Ganioglu, M. Gascon, H. Geissel, J. Gerl, M. Gorska, J. Grebosz, R. Hoischen, R. Kumar, N. Kurz, I. Kojouharov, L. Amon Susam, H. Matsubara, A. I. Morales, Y. Oktem, D. Pauwels, D. Perez-Loureiro, S. Pietri, Zs. Podolyak, W. Prokopowicz, D. Rudolph, H. Schaffner, S. J. Steer, J. L. Tain, A. Tamii, S. Tashenov, J. J. Valiente-Dobon, S. Verma and H. -J. Wollersheim, Phys. Rev. C 91, 014301 (2015).
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C. OTHERS

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3. **ASPIRE: An automated sample positioning and irradiation system for radiation biology experiments at Inter University Accelerator Centre, New Delhi,** Ashok Kothari, , P. Barua, M. Archunan, Kusum Rani, E.T. Subramanian, Geetanjali Pujari, Harminder Kaur, V.V.V. Satyanarayanan, Asitikantha Sarma, D.K. Avasthi, *Radiation Measurements*, May 2015, Pages 17–22

6.8 LIST OF SEMINARS CONDUCTED IN THE YEAR 2014-15

S.No.	Date	Title	Name & Affiliation
1.	12/05/2014	Fission-A Diagnostic Probe for Nuclear Dynamics and Stability	Prof. W. Udo Schroeder University of Rochester Rochester, USA
2.	23/05/2014	Nuclear Science with MeV Photons	Prof. Rangacharyulu Chary University of Saskatchewan Canada
3	24/07/2014	Study of binary fragmentation and compound nucleus fission in the reaction $^{50}\text{Ti}+^{208}\text{Pb}$	Dr. S. Appannababu Laboratori Nazionali di Legnaro Italy
4.	26/07/2014	Measurement and Correction of Transverse Dispersion in PETRA III	Prof. Gajendra Kumar Sahoo Deutsches Elektronen Synchrotron (DESY), Germany
5.	01/08/2014	Studies on 704 MHz five-cell superconducting RF cavity	Dr. Puneet Jain IIT Roorkee, Roorkee
6.	01/08/2014	Technology of various RF cavities	Dr. Praveen Kumar A.V. BITS, Pilani
7.	06/08/2014	The Omicron UHV VT SPM suited to work in a Beam line Environment	Mr. Michael Treber Omicron NanoTechnology

S.No.	Date	Title	Name & Affiliation
8.	07/08/2014	CERN LHC thermometry: Laboratory accuracy of millikelvin on an industrial scale in a hostile environment for thousands of channels. A Systematic large scale instrumentation development approach by CERN	Mr. Joby Anthony IUAC, New Delhi
9.	27/08/2014	Advancement in SPM Techniques	Dr. Arun Sikder Bruker Nano Sciences
10.	05/09/2014	Semiconductor Manufacturing – A Look Inside INTEL	Dr. Suddhasattwa Nad INTEL Corporation, USA
11.	26/09/2014	Photocathodes and Lasers for RF Injectors	Dr. Triveni Rao Brookhaven National Lab, USA
12. 13.	07/10/2014	New challenges in Atomic-, Plasma-, and Applied Physics at the Facility for Antiproton and Ion Research FAIR under construction at GSI	Prof. Thomas Kuehl GSI, Darmstadt
	28/10/2014	The Nobel Prize in Physics 2014: A prize for brightness with blue LEDs	Prof. Ashok Kumar Rastogi JNU, New Delhi
14.	07/11/2014	Some aspects of Gamma-ray spectroscopy at GANIL and the ILL	Prof. Gilles de France GANIL, CAEN, France
15.	14/11/2014	The Hoyle State Puzzle	Prof. Sailajananda Bhattacharya Variable Energy Cyclotron Centre & Homi Bhabha National Institute, Kolkata
16.	24/11/2014	A report on FEL, LINAC 2014 conferences and visits to DESY, Hamburg, HZDR, Dresden	Dr. Subhendu Ghosh Inter-University Accelerator Centre, New Delhi
17.	01/12/2014	Pulsed Four Mirror Green Laser Wire System For Effective Inverse Compton Scattering	Dr. Arpit Rawalkar KEK, Japan
18.	02/12/2014	Radiation Source ELBE at Helmholtz Center Dresden Rossendorf (HZDR) and status of the upgrade	Dr. Peter Michel Helmholtz Zentrum Dresden Rossendorf, Dresden, Germany
19.	02/12/2014	Undulator Developments at DESY	Dr. Markus Tischer Deutsches Elektronen-Synchrotron (DESY) Hamburg, Germany

S.No.	Date	Title	Name
20.	05/12/2014	Orientation and impact parameter dependent electron-capture collisions	Prof. Haruo Shiromaru Tokyo Metropolitan University Japan
21.	13/12/2014	Transverse wobbling in nuclei	Prof. Umesh Garg University of Notre Dame Notre Dame
22.	24/12/2014	Nanostructuring surfaces: molecular ordering dependence with substrate	Dr. X. Torrelles ICMAB-CSIC, Barcelona (Spain)
23.	30/12/2014	Bridging the divide: Academic Research and Commercialization-A Personal Perspective	Prof. T. Venkatesan National University of Singapore
24.	02/01/2015	Superconducting Magnet Technology for MRI	Prof. Yukikazu Iwasa Massachusetts Institute of Technology, Cambridge
25.	12/01/2015	Actual meaning of youth in nation building	Dr. S.K. Joshi DRDO, New Delhi
26.	13/01/2015	Electro-osmotic Fluid Flow in Porous Membranes	Dr. Saumitra Vajandar NUS, Singapore
27.	03/02/2015	One hundred years of scintillation: from ZnS to LaBr ₃ :Ce	Prof. Indranil Mazumdar TIFR, Mumbai
28.	06/02/2015	Simulation of the effects of anatomical changes on pencil beam proton dose distributions on locally advanced lung cancer patients	Ms. Yenny Zui-Yen Szeto The Netherlands Cancer Institute Amsterdam (The Netherlands)
29.	19/02/2015	Ionoacoustic characterization of the proton Bragg peak for radiation therapy	Prof. W. Assmann Munich, Germany
30.	25/02/2015	Detection Systems for Space	Dr. D.O. Kataria University College London London
31.	27/02/2015	Current Status of Food Irradiation in the World and Japan	Dr. Tamikazu Kume Dalat University, Da Lat (Vietnan)
32.	27/02/2015	Science and Technology of Food Irradiation	Prof. Chary Rangacharyulu University of Saskatchewan Canada

S.No.	Date	Title	Name
33.	27/02/2015	Food Security from African Perspective	Dr. Burton Mwamila Nelson Mandela African Institute of Science and Technology Tanzania
34.	10/03/2015	Precision Tests of Fundamental Interactions with Ion Trap Experiments	Prof. Wolfgang Quint GSI Helmholtzzentrum für Schwerionenforschung, Germany

6.9 LIST OF TECHNICAL REPORTS /MEMOS (2014-15)

A. List of Technical Reports

Sl.	Title	Authors	Category	Reference No.
1.	Feedback Controller for Piezo Actuator Based Phase Locking of Super Conducting Quarter Wave Resonator (SCQWR)	S.K. Suman, Rajesh Kumar, Mukesh Kumar, D.S. Mathuria, B.K. Sahu, A. Mandal	Instrumentation	IUAC/TR/SKS/2014-15/01
2.	High Precision Liner Bipolar Current Regulated Power Supply for High Current Injector (HCI) Steerer Magnets.	S.K. Suman, Rajesh Kumar, Mukesh Kumar, A. Mandal	Instrumentation	IUAC/TR/SKS/2014-15/02
3.	Temperature Controller for Thermoelectric (Peltier) based Cooler and Heater	S.K. Suman, Rajesh Kumar, Mukesh Kumar, A. Mandal	Instrumentation	IUAC/TR/SKS/2014-15/03
4.	24-Channel High Voltage (-2kv/2.5mA) Power Supply for NAND Facility	S.K. Suman, Rajesh Kumar, J. Antony, Mukesh Kumar, S. Venkataramanan, P. Sugathan	Instrumentation	IUAC/TR/SKS/2014-15/04
5.	Performace test of the indigenously developed Vortex tube	Suresh Babu. M.V, R.N. Dutt, Manoj Kumar and T.S. Datta	Development	IUAC/TR/SBMV/2014-15/05

Sl.	Title	Authors	Category	Reference No.
6.	Modification of PSA System of LN2 Plant with New Air Drier	Suresh Babu. M.V, Manoj Kumar, Anup.C, Jacob. C, Soumen Kar, Santosh K. Sahu and T.S. Datta	Maintenance	IUAC/TR/SBMV/2014-15/06
7.	Ultra fast (3ns) high voltage switch for beam pulsing at LEIBF	Rajesh Kumar, Rajkumar, S.K. Suman, C.P. Safvan	Instrumentation	IUAC/TR/RJK/2014-15/07
8.	Three Channel Linear High Voltage (± 2 kV) Amplifier for Electrostatic Steerer/Scanner	Rajesh Kumar, Mukesh Kumar, S.K. Suman, C.P. Safvan, A. Mandal	Instrumentation	IUAC/TR/RJK/2014-15/08
9.	Development of Magnet and associated Power Supply System for g - factor measurement set-up of nuclei	Rajesh Kumar, S.K. Suman, S. Mandal, Soumen Kar, A. Mandal	Instrumentation	IUAC/TR/RJK/2014-15/09
10.	Problems and their rectifications with PLC controller and its allied components of LN2 Plant	Suresh Babu.M.V.	Maintenance	IUAC/TR/SBMV/2014-15/10
11.	Technical Report on Commissioning of 30kW, 97MHz and 120kW, 48.5MHz power amplifiers for DTL and RFQ at Phase-III beam hall (HCI)	A.J. Malyadri , U.G. Naik Paramanand Singh, VVV. Satyanarayana, Yadhuvansh Mathur, Rajesh Kumar, Koteswar Rao, S. Venkataramanan, & Rajesh Mehta	Instrumentation (Radio Frequency Electronics)	IUAC/TR/SV/2014-15/11
12.	Technical Report on " <i>NaI + PMT Gamma ray spectroscopy system</i> "	S. Venkataramanan, Ajith Kumar B.P.	Instrumentation (Nuclear Electronics)	IUAC/TR/SV/2014-15/12
13.	Vacuum interlocking system for new LEIBF High Voltage Deck	Chandra Pal. Archunan	Electronics	IUAC/TR/CP/2014-15/13

B. List of Technical Memos

Sl.	Title	Authors	Category	Reference No.
1	'L' band prototype solid state power amplifier	S. Venkataramanan, Parmanand Singh	Instrumentation (Radio Frequency Electronics)	IUAC/TM/SV/2014-15/01
2	Automatic Sump Pump Control System	A.J. Malyadri & Bishamber Kumar	MG#2	IUAC/TM/AJM/2014-15/02
3	Cooling System for HCI-MHB	A.J. Malyadri, Bishamber Kumar & MG#2	MG#2	IUAC/TM/AJM/2014-15/03

6.10 SCHOOLS, WORKSHOPS, ACQUAINTANCE PROGRAMMMES, FOUNDATION DAY & NATIONAL SCIENCE DAY CELEBRATIONS

6.10.1 School on Accelerator Science and Technology

A school on accelerator science and technology was conducted at IUAC during May 12 – 23, 2014. The aim of the school was to provide in-depth learning opportunities for young scientists, engineers, faculty members, post-doctoral fellows and research scholars in this important and advanced field of research and development. The program was intended for individuals with professional interest in accelerator physics and technology and for those working in accelerator-based sciences. Program of the school consisted of intensive lectures, tutorials and hands on experiments on all aspects of particle accelerator technology. The school was sponsored by the Department of Science and Technology (DST), Government of India. About 40 participants attended the school.

The school covered topics like beam dynamics, RF accelerators, operational aspects of accelerators, ion sources, vacuum technologies, instrumentation, high power devices and radiation safety. A special review talk by an expert was delivered in the evening every day. Interactive tutorial sessions were held, where participants were divided into three groups and asked to solve problems on the board. Performance of each group was evaluated and the winning group was congratulated in the concluding session.





6.10.2 IUAC Acquaintance Programme at University of Kashmir, Srinagar

A one-day IUAC acquaintance programme titled 'Frontiers in Accelerator Based Physics' was held at the University of Kashmir, Srinagar, on 24th June 2014. The workshop was jointly organized by the Department of Physics, University of Kashmir (KU) and IUAC. The primary aim of the workshop was to acquaint local researchers, faculty members and students of the university and other academic institutions in the region, with the research opportunities and facilities at IUAC. The interim vice-chancellor of KU, Prof. A.M. Shah presided over the inaugural function. Prof. Shah stressed on the importance of such workshops in bringing the faculty and researchers of the university and the scientists from different branches of physics together. He also wished that such workshops would lead to lasting and fruitful collaborations between the University and IUAC. The programme was attended by the registrar of KU, heads of department of physics, KU and National Institute of Technology (NIT), Srinagar, along with many other senior faculty members, research scholars and M.Phil and M.Sc. students of KU and NIT.

Dr. D. Kanjilal, Director, IUAC, gave an overview of the accelerator programs and the associated research facilities at IUAC in his talk. He also highlighted some of the results from recent research works of topical interest in the field of condensed matter and material modifications carried out using the accelerators at IUAC. Dr. R.P. Singh, Scientist, IUAC, presented details of the experimental facilities for nuclear physics research. He also discussed some of the recent results published in the area of nuclear structure and nuclear reaction dynamics using heavy ions from particle accelerators at IUAC. Dr. P.Ganaifrom NIT, Dr. Ikram, Dr. G.Bhat and Dr. F.Ahmad from KU, presented some of their research activities and plans for future using accelerated ion beams and high power computing (HPC) facilities at IUAC. A total of about 90 delegates attended the program. The event was also reported in the local media of Kashmir.

6.10.3 IUAC Acquaintance Programme at Visvesvaraya Technological University, Belgaum

The Visvesvaraya Technological University (VTU), Belgaum in association with IUAC, organized an Acquaintance Programme on 18th Nov, 2014. The event was attended by 85 faculty members and research scholars from VTU, Karnataka University, Davangere University, Tumkur University and Kolhapur University. Few participants also came from Mangalore and Bangalore. In the Inaugural function, Dr. K. Asokan briefed about the IUAC facilities, the type of experiments that are being carried out and how the facility can be made available to the users from university. Dr. D. H. Rao, the Dean of VTU, mentioned the importance of research component in the universities in his speech and stressed upon gaining and sharing knowledge for societal benefits. In his presidential remarks, Dr. K. E. Prakash, Registrar of VTU, thanked IUAC for sharing resources and the financial support. Dr. Uday Kumar Khadke, BKIT Bhalki, local co-ordinator of the programme, briefed about the

day-long programme. Dr. M. M. Munshi, Professor, PG Centre, welcomed the gathering and Dr. A. Shivapur proposed vote of thanks. Dr. S. Muralithar from IUAC gave an overview of the IUAC facilities for conducting research in atomic, nuclear and radiation biology. Dr. K. Asokan explained about the experimental facilities and research programs in materials science. Prof. N. M. Badigar from Karnataka University explained the basics of nuclear fission and fusion and presented the work of his group carried out using IUAC facilities. Dr. Uday Kumar Khadke explained their work on energy loss of charged particles in phase transition materials. Dr. A. Basavaraj of Bangalore University presented a talk on SHI induced modification of PZT thin films and Co-ZnO DMS materials that he had conducted at IUAC and South Korea. Mr. Praveen Patil demonstrated few class room experiments using ExpEYES kit developed by Dr. B. P. Ajithkumar of IUAC. The function was concluded with the feedback from the participants. The organizers expressed their gratitude to the vice chancellor of VTU and the authorities for provide the logistics in organizing this event.



6.10.4 IUAC Acquaintance Programme at DAV, Indore

A one day Acquaintance Program was organized by IUAC in School of Physics, Devi Ahilya University, Indore, on March 03, 2015. Ninety seven participants attended the program. Out of this, 24 faculty members from School of Physics, UGC-DAE-CSR, other University Teaching Depts. and nearby colleges, attended the program. There was enthusiastic participation from M.Sc. & M.Phil. students and research scholars; in all 68 students from university teaching department, and 5 students from nearby colleges participated.

In the morning session two lectures were delivered - the first by Dr. P. N. Prakash highlighted the accelerator facilities at IUAC, the various programs such as, for PhD students, B.Sc. and M.Sc. students and beam time proposals etc. The second talk by Dr Pawan Kulariya focused on the experimental facilities in materials science including some glimpses of typical experiments that have been conducted using them. In the post lunch session, Dr V.R. Reddy from UGC-DAE-CSR, Indore, presented his work conducted using the facilities at IUAC. This was followed by a lecture on the nuclear physics facilities by Dr N. Madhavan, focusing on those areas which can be addressed using the facilities at IUAC. The concluding session was kept for open discussion in which questions from faculty members and students were answered by IUAC scientists. A photograph taken during this occasion is shown below.



6.10.5 Foundation Day Celebration at IUAC

The 25th Foundation Day of IUAC was celebrated on December 19, 2014 which coincided with the culmination of twenty five years since the first set of accelerator and experimental facilities were dedicated to the nation. The chief guest of the programme, Prof. Ved Prakash, Chairman, UGC, made the presidential remarks inspiring IUAC to achieve further success. He also advised IUAC staff to reach out to school and college students to enthuse the next generation to take up scientific research. The 25th Foundation Day lecture titled “Earth System Science and Humanity” was delivered by renowned scientist, Dr. Shailesh Nayak, Secretary, Ministry of Earth Sciences, Government of India. Dr. Nayak explained the tasks that had been achieved for an early warning system for tsunami and the various applications of satellite systems for humanity and for the preservation and utilisation of our earth's resources. The Centre's yearly activities were presented by Dr. D. Kanjilal, Director, IUAC. The awards and certificates for winners of IUAC excellence awards and mementos for staff who had completed 25 years of service were jointly presented by Dr. Ved Prakash and Dr. D. Kanjilal. Dr. N. Madhavan, Scientist, IUAC conducted the proceedings and delivered the vote of thanks.



Students of class XI and XII, from more than fifteen schools in Delhi along with their science teachers, participated in the day-long events. The afternoon programme, especially for school students, consisted of an introductory lecture followed by several experimental demonstrations by IUAC scientists and engineers to show the wonders of science. A visit to accelerators and experimental facilities were also conducted.

Scientific interaction between the participants and the speakers of the school was instrumental to generate interest among the participants and to impart advanced knowledge to them. It is expected that the interaction and exchange of knowledge between the researchers of India and Japan working in the field of accelerator science and technology will increase in future.

6.10.6 National Science Day

The national science day is celebrated in India each year to mark the discovery of the 'Raman Effect' by eminent Indian physicist Sir C. V. Raman on 28 February, 1928. Sir Raman was awarded the Nobel Prize in physics for this discovery in 1930.

This year, the national science day programme was organized by Ms. Indra Sulania, Scientist, IUAC. Students, studying in second and third years of B. Sc., from various colleges of University of Delhi and Jamia Millia Islamia were invited to take part in the event. About 80 participants attended the celebration at IUAC. Prof. Subhasis Ghosh, School of Physical Sciences, Jawaharlal Nehru University, delivered an invited talk titled: 'Can nanotechnology create an Utopia!!'. The 'research highlights at IUAC' were presented by Dr. N.Madhavan from IUAC. A talk on 'Pelletron Accelerator' was delivered by Ms. Devarani Devi, IUAC. Dr. S. A. Khan and Dr. U. B. Singh, both from IUAC conducted a science quiz to make the programme more interactive for the students. The participants were also escorted to the various experimental facilities that are available at IUAC. At the end of the event, participation certificates were distributed among the students.

6.10.7 Indo-Japan School on Advanced Accelerators for Ions and Electrons





An advanced Indo-Japan accelerator school was organized at IUAC during February 16-18, 2015 to generate interest about advanced accelerators and related fields in the young scientific minds of the country. The lecturers of the school were experts from High Energy Accelerator Research Organization (KEK), Japan and the leading accelerator laboratories of India e.g. BARC, RRCAT, VECC, TIFR, SAMEER, CSIR-CMERI and IUAC. Participants of the school were chosen from the vibrant community of graduate students, research workers and young scientists/faculty members from various universities, institutions and R&D laboratories. About ninety participants and fourteen speakers participated in the school. There were eighteen lectures in the school, out of which eight were delivered by eminent Japanese scientists and ten were delivered by Indian experts. An evening lecture was also organized.

6.10.8 Independence Day and Republic Day Celebrations

The Republic day was celebrated at IUAC by organizing sports competition among the children and residents of the campus. Similarly, The Independence Day was also celebrated by organizing competition among children on various topics like on the spot painting, elocution, acting and debate.





6.10.9 Annual Cultural Programme

The annual cultural festival “SPANDAN” of IUAC for the year 2014 was organized by Sports & Cultural Committee on 2nd November, 2014. About 80 children supported by the elders participated in a function adorned by various regional dances, songs, instrumental music and drama.



6.10.10 Swachh Bharat Celebrations on Oct. 2, 2014

