

**A BRIEF STATUS REPORT ON THE ACTIVITIES OF
NUCLEAR DATA PHYSICS CENTRE OF INDIA (NDPCI)**

Alok Saxena

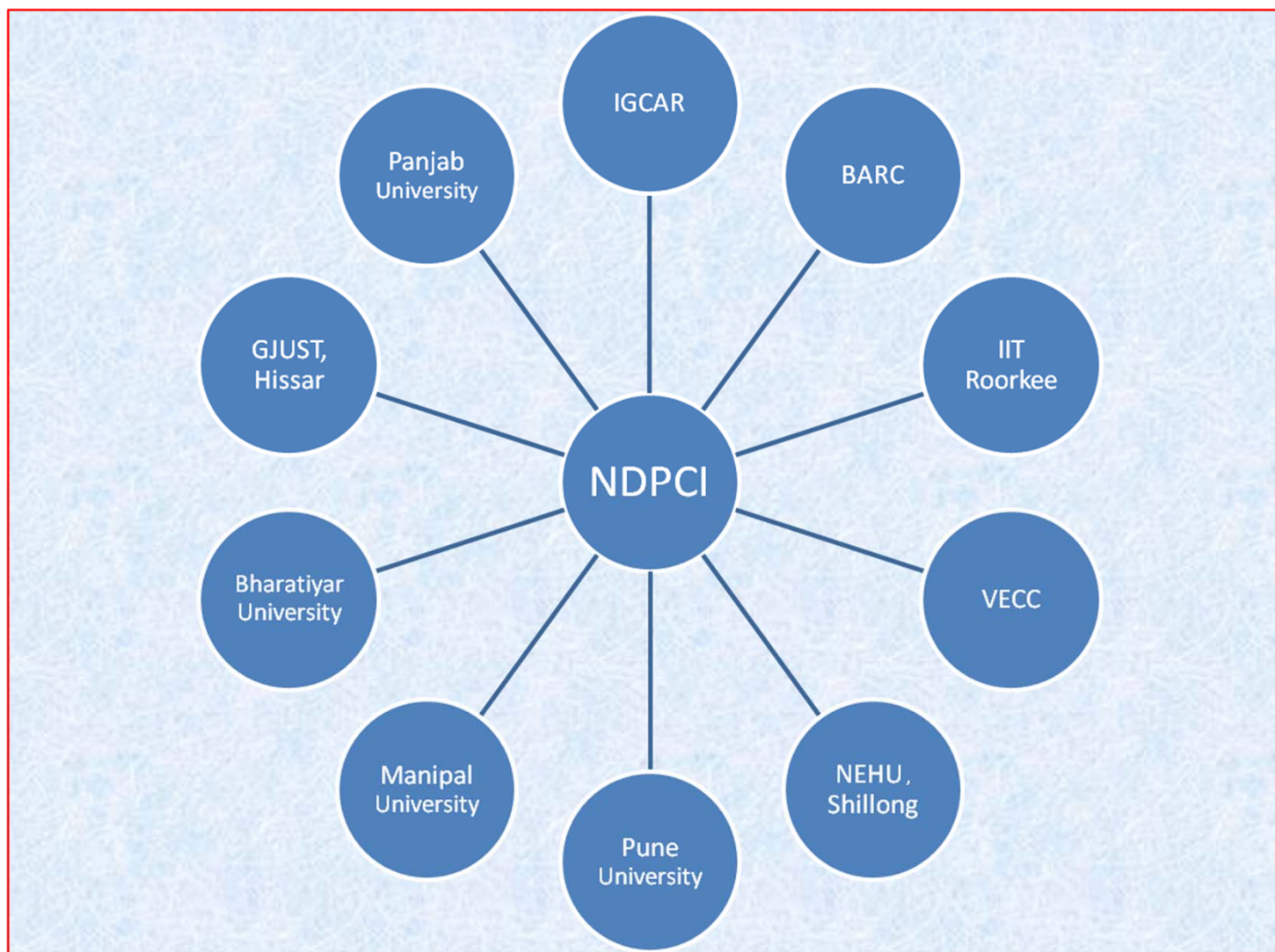
Nuclear Physics Division, BARC, Mumbai-400 085
India

On Behalf of NDPCI

Activities such as the following pursued by NDPCI

- Organize theme meetings and national conferences on nuclear data physics
- Provide support for joint experiments and development of computer programmes interfacing with nuclear databases.
- Provide support to advanced reactor applications to enable use of updated nuclear data
- Coordinate experimental and theoretical programmes on nuclear data physics involving IAEA Nuclear data Section and be a single window from India for all its nuclear data physics activities as required by the IAEA-NDS.
- Coordinate experimental and theoretical programmes on nuclear data physics involving international formal [e.g, CERN n_TOF – BARC MOU programme] and informal [e.g, Korea informal collaborations] collaborations
- NDPCI can help to form useful local neutron data centres in Universities and Institutes on a coordinated programme mode. (IIT R, PU etc)

Linkages of NDPCI with DAE Units and Universities As on Today (19-Sep-2011)



Vishvabharati University, Calcutta and Mizoram University

NDPCI has been very successful to bring people in various fields (e.g., Nuclear Physics, Reactor and Radiochemistry Divisions of BARC, IGCAR, VECC etc.) and students and staff from various Universities across India. A very unique activity. Both experimentalists, theoreticians are being covered.

- **The Composition of the Programme Review Committee (PRC) as per MOU :**

• S. Kailas, Dir. Physics Group, BARC	Chairman
• S. G. Markandeya, Scientific Secretary (BRNS)	Member
• A. Chatterjee, Head, NPD, BARC	Member
• A. Goswami,Head RCD, BARC	Member
• P. K. Sarkar, Head, HPD, BARC	Member
• D. Srivastava (VECC)Head, Physics Group, VECC, Kolkatta	Member
• V. N. Bhorkar (Pune University)	Member
• A.K.Jain, Dept. of Physics, IIT, Roorkee	Member
• P. D. Krishnani, Head, RPDD, BARC	Member
• R.S. Keshavmurthy, Head, RPD, IGCAR	Member
• A.G.Apte, Head, Computer Div. BARC	Member
• A.Saxena, NPD BARC	Member-Secretary (NDPCI)

- **The Composition of the Programme Implementation Committee (PIC) as per MOU:**

• P.D. Krishnani, Head, RPDD, BARC	Chairman
• D. Raj	Member
• Rajeev Kumar	Member
• H. Naik, RCD, BARC	Member
• Sarbjit Singh, RCD, BARC	Member
• Amar Sinha, PM, NXPF	Member
• B.K.Nayak, NPD, BARC	Member
• V. Gopalakrishnan, NDS, RPD, IGCAR	Member
• G. Pandikumar, NDS, RPD, IGCAR	Member
• CSR Murthy, Computer Division	Member
• Gopal Mukherjee, VECC	Member
• C. P. Reddy, FBTR, IGCAR	Member
• D. Roy, Programme Officer, (BRNS)	Member
• Alok Saxena, NPD, BARC	Member-Secretary (NDPCI)
• S. Ganesan, EX BARC	Permanent Invitee Member

The 4th DAE-BRNS Theme Meeting on EXFOR Compilation of nuclear data, (April 4– 8, 2011), Punjab University, Chandigarh

was phenomenally successful ; more than 80 Indian new EXFOR entries into the IAEA database increasing visibility to India's nuclear physics experiments and data generated in Indian experiments.

S. Ganesan (BARC), A. Saxena (BARC) and B. Behera (Panjab University) were main organizing committee members as Chairman, Technical convener and local convener respectively.

FACULTY: S. Dunaeva (Ex-IAEA), Russia (Supported from NDPCI funds) and Prof. N. Otsuka from IAEA

PARTICIPANTS: 70 scientists various institutes of India attended;

covering a wide geographical scope, as well as scientific career profiles, from graduate students to several distinguished senior professors. See: <http://physics.puchd.ac.in/events/exfor2011/>

THEME Every day after 1 – 2 lectures participants made compilation to EXFOR in small groups on 20 PCs and additionally on 15 laptops. The identification for coding into EXFOR of all the suitable Indian articles published in the literature was done in consultation with and by the IAEA-NDS staff.

This process is continuing even after the workshop as many scientists and students are following up the EXFOR compilation activities after the Chandigarh meeting.

Prof. Svetlana also visited VECC , BARC for training and interaction related EXFOR compilations.

India successfully contributed more than 200 EXFOR entries.

see: <http://www-nds.iaea.org/nrdc/india/>

NEXT MEETING in BHU, VARANASI during Feb. 18-22, 2013



Extracts from this website <http://www-nds.iaea.org/nrdc/india/>
as on 4th April 2012 are shown below and
in the next few slides

Indian EXFOR CoCoS (since...)

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Indian EXFOR CoCoS - Compilation Control System (Last updated:2012-04-04)

- See also [this page](#) for reservation of new articles.
- All ZCHEX and [JANIS Trans Checker](#) error messages must be discussed with the coordinator before submission.
- Entries must be submitted within 1 month since reservation. **Reservation is cancelled if the entry is not submitted within 1 month.**

Status

- Compile!: The entry must be compiled.
- Correct!: The entry must be corrected. See ZCHEX/JANIS output.
- Submitted: The entry is waiting checking.
- Finalized: The entry was finalized. To be added to the database.
- EXFOR: The entry is entered into the database.

Source

- Curve: Digitized data exist. Ask authors numerical data if the article is not old.
- Table: All data are from authors.
- ?: Source information is missing. Add source information under STATUS.

ZCHEX and JANIS Trans Checker are developed and maintained by IAEA Nuclear Data Section and NEA Data Bank, respectively. Thanks.

Entry	Compiler	e-mail	Reference	Status	Source	Draft	ZCHEX	JANIS	Booked	Updated	Quality	Remark
33029	B.J.Roy	bidyutr2003@gmail.com	J,RCA,55,173,1991	EXFOR	Table	x	x	x	2011-04-04	2011-05-03		
33032	M.Bhike	megha.bhike@gmail.com	J,PR,137,B511,1965	EXFOR	Curve	x	x	x	2011-04-04	2011-04-07		
33033	P.M.Prajapati	paresh_21soft@yahoo.co.in	J,EPJ/A,47,51,2011	EXFOR	Table	x	x	x	2011-04-26	2011-06-06		
33034	R.Mandal	ranjita169@gmail.com	J,KPS,,(1073),2011	EXFOR	Table	x	x	x	2011-05-16	2011-06-09		paper# 1073
33035	Y.S.Sheela	krishsanthi76@rediffmail.com	J,PRM,40,299,1993	EXFOR	Curve	x	x	x	2011-04-04	2011-04-07		
33036	H.Naik	naikhbarc@yahoo.com	J,EPJ/A,47,100,2011	Compile!	Table				2012-03-01			
33037	P.Prajapati	paresh_21soft@yahoo.co.in	J,NSE,171,1,2012	Compile!					2012-03-19			

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http://www-nds.iaea.org/nrdc/india/

Indian EXFOR CoCoS (since...)

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33036	H.Naik	naikhbarc@yahoo.com	J,EPJ/A,47,100,2011	Compile!	Table					2012-03-01			
33037	P.Prajapati	paresh_21soft@yahoo.co.in	J,NSE,171,1,2012	Compile!						2012-03-19			
33038	M.Bhike	megha.bhike@gmail.com	J,NSE,170,44,2012	Compile!						2012-03-23			
D6096	M.Bhike	megha.bhike@gmail.com	J,RCA,97,663,2009	EXFOR	Table								
D6097	M.M.Musthafa	mm_musthafa@rediffmail.com	J,NP/A,315,157,1979	Correct!	Curve	x	x	x					
D6098	R.Mandal	ranjita169@gmail.com	J,PR/C,83,024607,2011	EXFOR	Curve	x	x	x		2011-05-05	2011-05-11		
D6099	P.M.Prajapati	paresh_21soft@yahoo.co.in	J,NP/A,648,45,1999	EXFOR	Table	x	x	x		2011-04-04	2011-04-07		
D6100	M.Hemalatha	hemalatha33@yahoo.com	J,NP/A,405,55,1983	EXFOR	Curve	x	x	x		2011-05-11	2011-05-11		
D6101	M.Bhike	megha.bhike@gmail.com	J,PR/C,53,544,1996	EXFOR	Curve					2011-11-24	2011-12-21		
D6102	T.Mazumdar	tanay_bwn@yahoo.co.in	J,RCA,55,173,1991	EXFOR	Table	x	x	x		2011-04-04	2011-04-07		
D6103	B.Jyrwa	bjyrwa90@hotmail.com	J,EPJ/A,44,403,2010	EXFOR	Table	x	x	x		2011-04-04	2011-04-08		
D6104	P.M.Prajapati	paresh_21soft@yahoo.co.in	J,PL/B,576,260,2003	EXFOR	Table	x	x	x		2011-04-04	2011-04-07		
D6105	P.M.Prajapati	paresh_21soft@yahoo.co.in	J,ZP/A,342,95,1992	EXFOR	Table	x	x	x		2011-04-04	2011-04-07		
D6106	M.Bhike	megha.bhike@gmail.com	J,NP/A,564,271,1993	EXFOR	Curve	x				2010-12-27	2011-01-04		
D6107	M.Bhike	megha.bhike@gmail.com	J,NP/A,588,706,1995	EXFOR	Curve	x				2010-12-27	2011-01-05		
D6108	M.Bhike	megha.bhike@gmail.com	J,PR/C,81,014311,2010	EXFOR	Table	x				2010-12-31	2011-01-31		
D6109	M.Bhike	megha.bhike@gmail.com	J,PR/C,81,054601,2010	EXFOR	Table	x				2010-12-31	2011-03-08		
D6110	M.Bhike	megha.bhike@gmail.com	J,PR/C,81,054608,2010	EXFOR	Table					2011-01-	2011-01-		

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http://www-nds.iaea.org/nrdc/india/

Indian EXFOR CoCoS (since...)

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D6152			J,PR/C,53,2739,1996						21	12		
D6153	G.Kaur	gur.1187@gmail.com	J,PR/C,54,3099,1996	Accepted	Curve	x	x	x	2011-04-04	2011-04-08		
D6154			J,PR/C,28,1206,1983									
D6155	B.Satheesh	satheesh.b4@gmail.com	J,PR/C,46,250,1992	Accepted	Table	x	x	x	2011-04-04	2011-05-08		
D6156			J,JRN,227,181,1998									
D6157			J,PR/C,45,1026,1992									
D6158			J,JP/G,35,025101,2008									
D6159	H.Kumar	amu.harish@gmail.com	J,JP/G,37,115101,2010	Accepted	Table	x	x	x	2011-04-04	2011-04-07		
D6160	M.Bhike	megha.bhike@gmail.com	J,PR/C,82,054601,2010	Accepted	Table	x	x	x	2011-04-04	2011-04-19		
D6161			J,NC/A,104,475,1991									
D6162	S.Singh	sarbajitsingh@yahoo.com	J,PR/C,48,221,1993	Accepted	Curve	x	x	x	2011-04-04	2011-04-08		
D6163	V.Thakur	vidyathakur@yahoo.co.in	J,PR/C,51,3109,1995						2011-06-26			
D6164	B.Jyrwa	bjyrwa@gmail.com	J,EPJ/A,44,385,2010	Compile!					2012-03-19			
D6165	M.Kaur	manisaini153@gmail.com	J,IMP/E,14,1063,2005	Compile!								Also EPJ/A,25,S1,277,2005.
D6166	B.Jyrwa	bjyrwa90@hotmail.com	J,PR/C,44,1049,1991	Accepted	Curve	x	x	x	2011-04-13	2011-04-14		
D6167	R.Mandal	ranjita169@gmail.com	J,PRM,57,195,2001	Accepted	Curve	x	x	x	2011-04-26	2011-05-02		
D6168	R.Mandal	ranjita169@gmail.com	J,JRN,102,499,1986	Accepted	Table	x	x	x	2011-04-29	2011-05-11		
D6169												
D6170	S.Shivashankar	shivu1982@hotmail.com	J,JRN/L,119,303,1987	Accepted	Table	x	x	x	2011-04-18	2011-04-19		
G0501	P.M.Prajapati	paresh_21soft@yahoo.co.in	J,NP/A,853,1,2011	EXFOR	Table	x	x	x	2011-04-04	2011-04-07		

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Next Meeting in BHU Varanasi in Feb. 18-22, 2013.

<http://www-nds.iaea.org/nrdc/india/>

MAY 2010, IAEA-NDS, VIENNA, EXFOR WORKSHOP
S.V. Surayanarayana and H. Naik participated

May 2011, IAEA-NDS, VIENNA, EXFOR WORKSHOP
Sarbjit Singh and Megha Bhike participated.

AASPP-1, 2010, Hokkaido University: Attended by S. Ganesan, Devesh Raj, Paresh Prajapati and H. Naik.

AASPP-2: 2011: Beijing, China: Attended by H. Naik, Dr. M. Balasubramaniam and S. Ganesan This 2nd Asian Nuclear data Development Workshop, 5-9 Sep. 2011, Beijing was supported by China Nuclear Data Center (CNDC), Science and Technology on Nuclear Data Laboratory and the Asia-Africa Science Platform Program (AASPP) of the Japan Society for the Promotion of Science (JSPS). This workshop was being organized by CNDC, China Institute of Atomic Energy (CIAE).

DAE-BRNS project for EXFOR

1. **Special Project under Nuclear data Physics Centre of India entitled, “EXFOR COMPILATION OF NUCLEAR REACTION DATA”** Sanctioned by DAE-BRNS to North eastern University, Shillong
Prof. (Mrs.) B. Jyrwa, Rs 8,15000/- lakhs for two years

Two Project assistants (M.Sc. (Physics) Level qualification) Ms. Rituparna GHOSH and Ms. Sylvia Badegar were recruited by NEHU for a 2-year period on contract. (Interacted with IAEA experts at VECC, Chandigarh meeting) (one year Completed)

2. Another project has been approved recently for funding under NDPCI by Prof. Sudipta Narayan Roy, for a project in Vishva-Bharati University, Shantiniketan for Rs 9.11 lakhs for two years (with Dr. Gopal Mukherji, VECC as PC and A. Saxena as Co-PC).
3. **Another project being processed involves B. Lalremruata from Mizoram university as principal investigator is in review stage which will include EXFOR compilation in addition to nuclear data measurements and evaluation. We are evolving a mechanism to coordinate the EXFOR compilation activities with IAEA-NDS (SVS Suryanarayan as PC-1 and A.Saxena as PC-2 and H. Naik as PC-3).**

**The second DAE-BRNS Workshop on
Covariance error matrix and its applications in
reactor fuel cycle and technology",** November 29 -
Dec. 3, 2010, Vel Tech Dr.RR& Dr.SR Technical University, Chennai,
Tamilnadu.-PARTIALLY FUNDED BY HOST was very successful.

Dr. Peter Schillibecx from IRRM, Belgium, Prof. Leeb of Vienna, Hiroshi NOTO, Japan, O. Cabellos, Spain, M. Lee, Korea were among the speakers in this workshop.

Conducted detailed presentations, lectures and discussions in
the field of variance-covariance matrix of nuclear data for
nuclear system applications

“Establishing methodology and evaluation of Indian nuclear data file for a few selected neutron induced nuclear reactions including covariance error matrix for applications to advanced nuclear systems in India”

Project proposal from Manipal university in proposal stage

- Phase-I of DAE-BRNS nuclear data covariance project (2007-2011) successfully completed at the Statistics Department, Manipal University. Project closed.

- The NDPCI project by Prof. A.K. Jain (IIT-R) “**Improved Nuclear Structure and Decay Data for Nuclear Models in the Heavy Nuclides Region**” has been formulated, processed and sanctioned. (Rs 25 lakhs) for three years

Nuclear Structure and Decay Data evaluation activity is being carried out at IIT Roorkee since 2003 under the auspices of IAEA. New detection arrays and new accelerators in India and abroad have made it possible to reach regions of high spin and high excitation and obtain accurate data even for nuclei far from the stability. Large amount of such data are being accumulated which need systematic evaluation and standardization. The project aims at compilation and evaluation of recent data, and carry out fresh evaluation primarily in the mass region 218 to 229.

Evaluated data for $A=222$ was published in Nuclear Data Sheets for $A=222$, 112 (2011) 2851-2886, S. Singh, A.K. Jain and J.K. Tuli.

Currently evaluation of $A=224$ mass chain is going on.

AT VECC

ENSDF Evaluation of $A = 95$ has been completed during this period in collaboration with National Nuclear Data Centre (NNDC), BNL, USA in the ENSDF formalism and has been published in the journal Nuclear Data Sheets.

(S.K. Basu, G. Mukherjee)

ENSDF Evaluation of $A = 150$ has been completed during this period in collaboration with National Nuclear Data Centre (NNDC), BNL, USA.

The evaluation has been submitted for publication in the journal Nuclear Data Sheets. (S.K. Basu)

DAE-BRNS Project Transfer

- Transfer of Project from Thematic sub-committee no. 4 (TSC-4) of NRFCC to NDPCI (under NRFCC, BRNS) with Title: Theoretical simulation of induced activity and production cross section of radionuclides in neutron and charged particle induced reactions. Principle Investigator: Dr. Snehlata Goel, GJUST, Hisar

Transfer completed. Project in progress. Total budget 14.5 lakhs for three years.

- The project is aimed to understand the reaction mechanism in high energy neutron and charged particle bombardment of various target nuclei. The fast reactor, ITER and ADSS programmes require the cross section data in the energy range to be studied in this project.

INDIAN MIRROR WEBSITE

The Indian mirror web-site of IAEA-Nuclear Data Section (<http://www-nds.indcentre.org.in>) greatly helps the contributing scientists, and the number of visits to this site is continually on the increase.

Therefore, the relevant MOU between DAE/BARC and the IAEA which was to end in 2010 and has been continued beyond 2010. This mirror web-site is being maintained by Computer Division at HBNI campus in Anushaktinagar. This was appreciated and mentioned by Chairman, DAE in the Annual IAEA General Conference in 2010.

http://www-nds.iaea.org/ Gmail - Inbox (23) - aloks279@... IAEA Nuclear Data Services

International Atomic Energy Agency
Nuclear Data Services
Provided by the Nuclear Data Section

IAEA.org | NDS | Mirrors: India | Brazil

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Hot Topics » ENDF/B-VII.0 • Safeguards data • WIMS-D Library • Fission Yields • ADS **News** » June 2009, POINT2009 Released

Request
CD/DVD with documentation, data, codes, etc.

Quick Links
ADS-Lib
Atomic Mass Data Centre
CINDA
Charged particle reference cross section
DROSG-2000
EMPIRE-II
ENDF
ENDF Archive
ENDF Utility Codes
ENDVER
ENSDF
ENSDF ASCII Files
ENSDF programs
EXFOR
FENDL-2.1
Fission Yields
GANDR
IBANDL
INDL/TSL
IRDF-2002
LARELKIN

NEW
EAF-2010 European Activation File (816 materials/60MeV), UK [list] [retrieve]
RIPL-3 reference parameters for nuclear model calculations, 2010 [page]
JENDL-4.0 Japanese evaluated nuclear data library, 2010 [page] [list]

Main All Reaction Data Structure & Decay by Applications Doc & Codes Index Events

EXFOR Experimental nuclear reaction data	LiveChart of Nuclides Interactive Chart of Nuclides	CINDA neutron reaction bibliography
ENDF Evaluated nuclear reaction libraries	ENSDF evaluated nuclear structure and decay data (+XUNDL) **	NSR Nuclear Science References *
NuDat 2.5 selected evaluated nuclear structure data **	RIPL reference parameters for nuclear model calculations	IBANDL Ion Beam Analysis Nuclear Data Library
PGAA Prompt gamma rays from neutron capture	FENDL-2.1 Fusion Evaluated Nuclear Data Library, Version 2.1	Photonuclear cross sections and spectra up to 140MeV
NGATLAS atlas of neutron capture cross sections	Safeguards Data recommendations, August 2008	Medical Portal Data for Medical Applications
Charged particle reference cross section Beam monitor reactions	IRDF-2002 International Reactor Dosimetry File	Standards - Neutron cross-sections, 2006 - Decay data, 2005

*Database at the IAEA, Vienna **Database at the US NNDC

IAEA Nuclear Data Section

IAEA-NDS Mission, Staff and more	Atomic and Molecular Data	Meetings Workshops	Newsletters	Coordinated Research Projects	Nuclear Reaction Data Center Network	Nuclear Structure & Decay Data Network	Technical Reports, TECDOCs	INDC Reports NDS	INDC Reports national labs	Computer Codes
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Mirrors

Partners

Events [1,2]

International Conference on Nuclear Criticality 2011
September 19-22, 2011
Edinburgh Conference Centre, United Kingdom

Third International Workshop on Compound-Nuclear Reactions and Related Topics (CNR*11)
September 19-23, 2011
Prague, Czech Republic

Waiting for response from iaea.org...

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Indian experimental criticality benchmarks

Preparation of integral Indian experimental criticality benchmarks for integral nuclear data validation studies. (KAMINI, PURNIMA-II benchmarks has been completed and accepted by the US-DOE). PURNIMA-I benchmarking in final stage of progress.

Nuclear data sets are being used for reactor sensitivity studies –AHWR, CHTR (RPDD, BARC); Fast Reactors (IGCAR), ITER-Test Blanket Module & Indian Fusion Reactors (IPR and BARC).

CERN n_TOF collaboration (Geneva)

- MOU was signed in Nov., 2008 for Indian participation n_tof experiments in phase II
- The annual O & M fee this time CHF 4264 was paid from the NDPCI funds
- Mr. Devesh Raj of RPDD participated in the n_tof experiments in 2010 and Mr. Pandikumar of IGCAR participated in 2011.
- **Main Objectives:**
- (1) neutron cross section measurements for nuclear astrophysics, (2) nuclear data measurements for advanced nuclear technologies and nuclear waste transmutation, and (3) neutron cross section measurements for basic nuclear physics.

Nuclear Data Measurements using BARC-TIFR Pelletron Facility

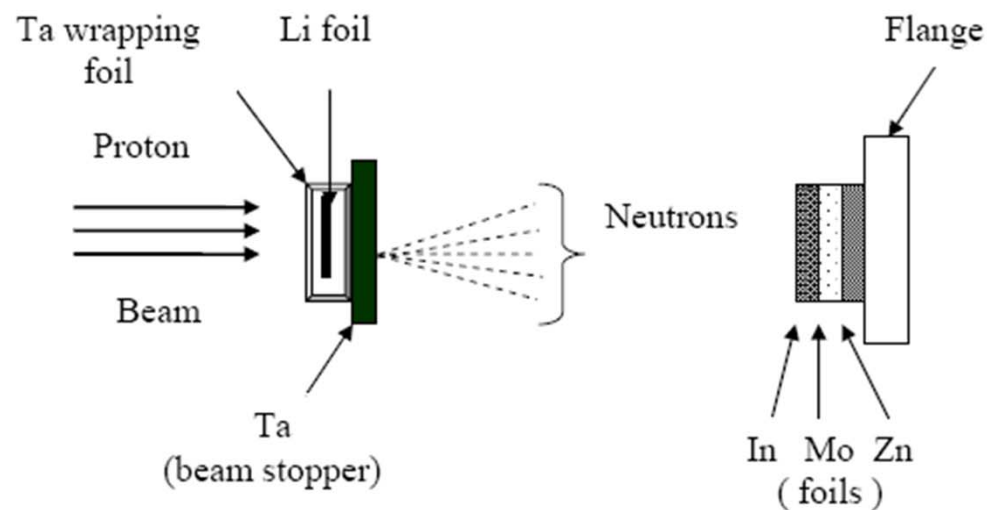


Fig. 1. Simple sketch diagram showing the arrangement used for neutron irradiation.

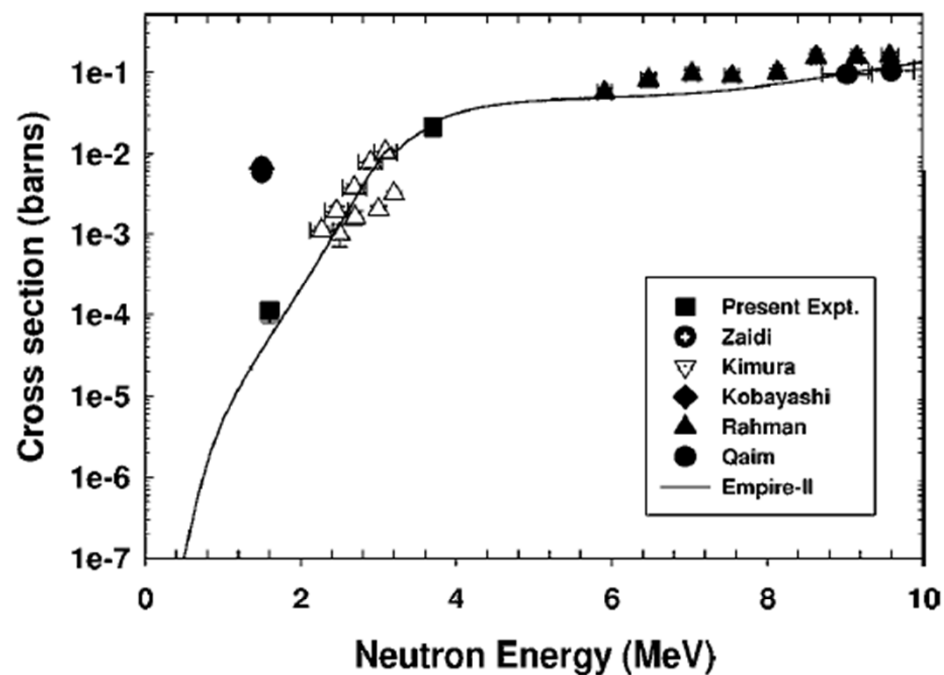
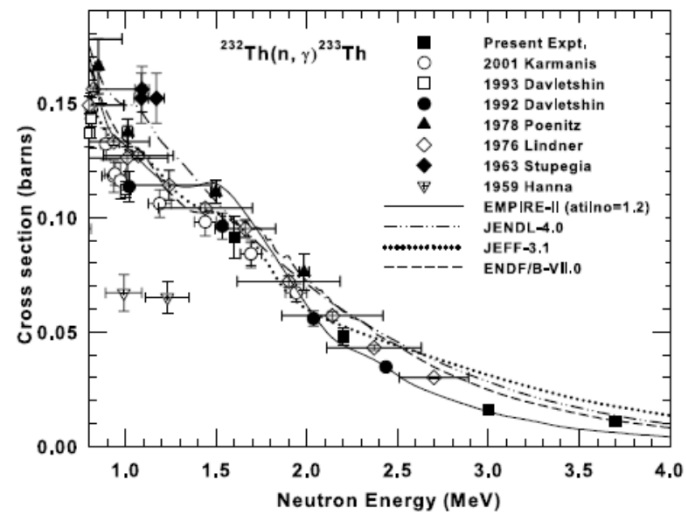
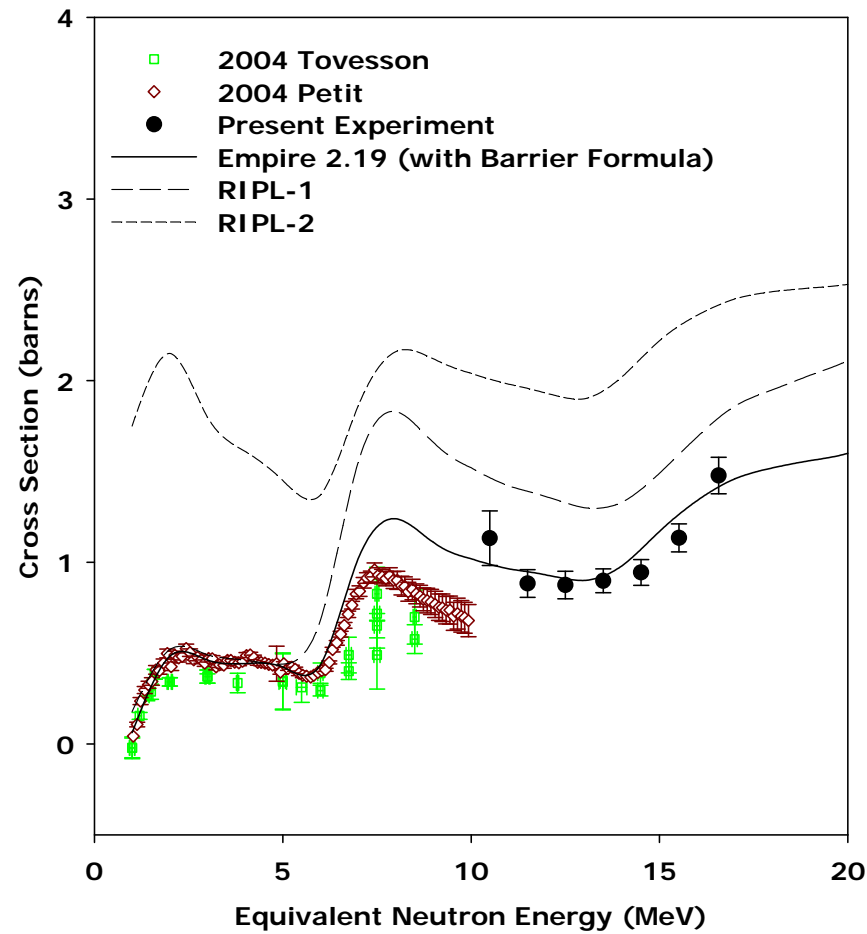


Fig. 4. Excitation function of $^{92}\text{Mo}(n, p)^{92m}\text{Nb}$ reaction. Filled square represents present measurement. Solid line represents Empire-2.19 calculations.



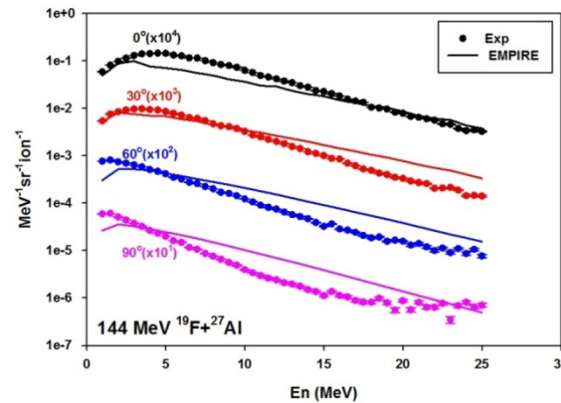
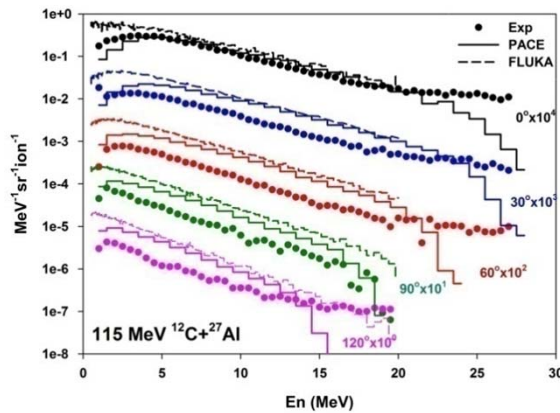
Excitation function of $^{232}\text{Th}(n, \gamma)$ (From M. Bhike et al., NUCLEAR SCIENCE AND ENGINEERING: 170, 1–10 (2012))

$^{233}\text{Pa}(n,f)$ Cross section



More work is being carried out using $^7\text{Li}+^{238}\text{U}$ for $^{241}\text{Pu}(n,f)$

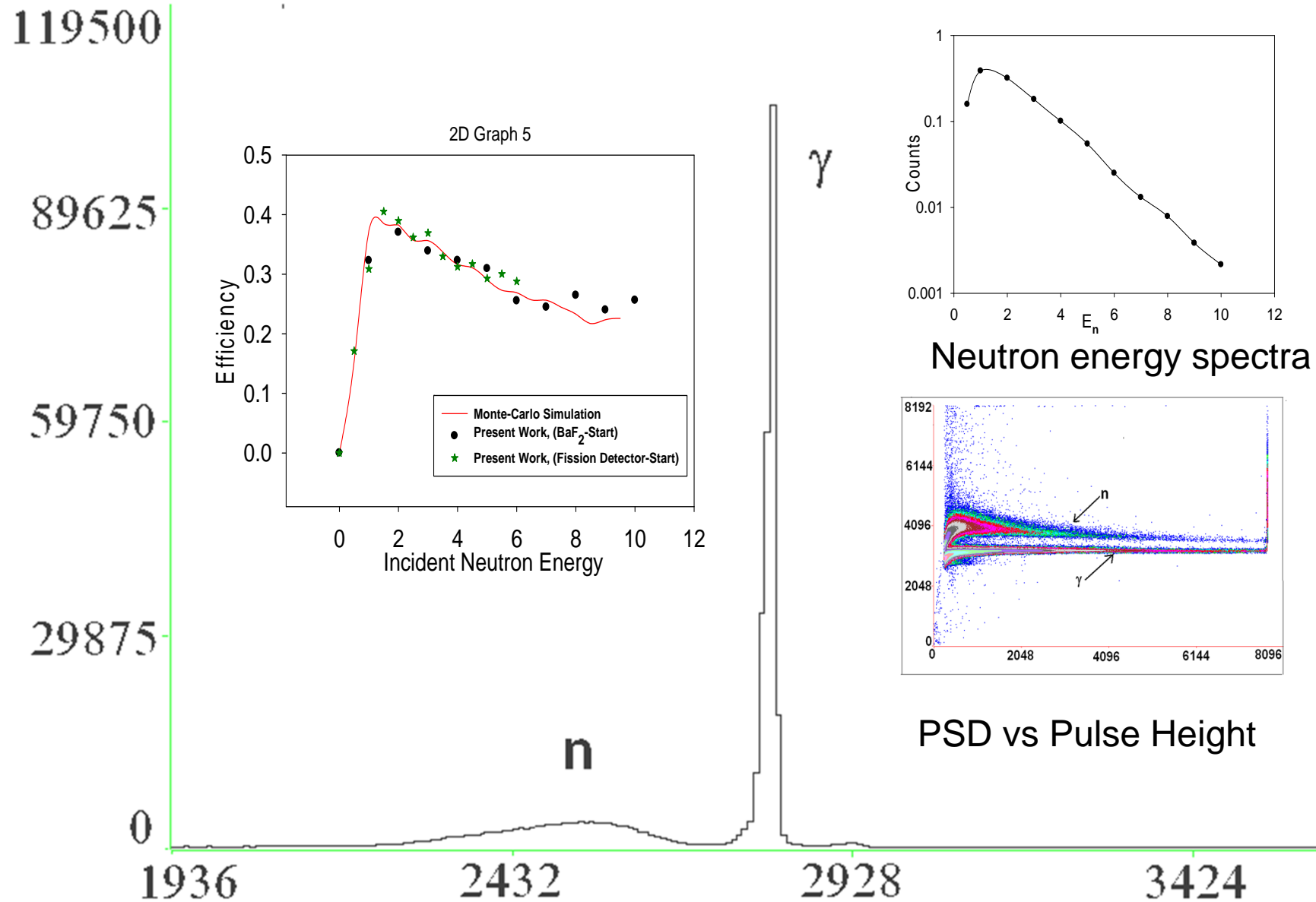
Measurement of neutron yield from thick targets bombarded by heavy ions of energy 7-9 MeV/amu.



Five liquid scintillators of 5cm diameter and 5cm thickness were placed at 1.5 meters from the target. Pulse shape discrimination was used to separate the neutrons from the photons while time of flight technique was used to measure the energy. The experimental results were compared with the statistical model codes PACE and EMPIRE and by the Monte Carlo code FLUKA. Preliminary results indicate that the codes do not reproduce the experimental data satisfactorily.

CHARCATERIZATION OF NEUTRON DETECTORS WITH ^{252}Cf SOURCE

For CRP on prompt neutron spectra





The TAGS set up at VECC using BaF₂ scintillator detectors. The 50 detector elements (3.5 x 3.5 x 5 cm³) were arranged in two halves each consisting of 25 detectors in the staggered castle type geometry. The two halves are shown in the figure separately.

EMPIRE 3.1
GANDR
FACULTY
R. CAPOTE
ANDREJ TRKOV



A theme meeting on nuclear reaction data evaluation was held at the Homi Bhabha National Institute in Mumbai during 13-17 February 2012.

List of Publications in 2010-12

1. Inter-comparison of JEF-2.2 and JEFF-3.1 Evaluated Nuclear Data through Monte Carlo Analysis of VVER-1000 MOX Core Computational Benchmark

L. Thilagam, R. Karthikeyan, V. Jagannathan, K. V. Subbiah, S. M. Lee

Annals of Nuclear Energy, 37, 144–165, (2010).

•2. Mass-yield distributions of fragments from photo-fission of ^{nat}Pb induced by 50-70 MeV bremsstrahlung

Haladhara Naik, Guinyun Kim, Ashok Goswami, Sarbjit Singh, Vijay Kumar Manchanda, Devesh Raj, Srinivasan Ganesan, Young Do Oh, Hee-Seock Lee, Kyung, Sook Kim, Man-Woo Lee, Moo-Hyun Cho, In Soo Ko, and Won Namkung.

J. Radioanal. Nucl. Chem. 283, 439 (2010).

3. Measurement of photo-fission cross-section of ^{238}U using microtron facility

H. G. Rajprakash, Ganesh Sanjeev, K. B. Vijaykumar, H. G. Harish kumar, K. Siddappa, B. K. Nayak and A. Saxena

International Journal of Modern Physics E 20, (2011) 2361–2375

4. Measurement of photofission excitation of ^{237}Np

H G Rajprakash, Ganeshsanjeev, K B Vijay Kumar, K Siddappa, B K Nayak and A Saxena

Radiation Measurements, 46, 413 (2011)

5. Experimental determination of photofission cross-sections of ^{232}Th using electron accelerator

H.G. Raj Prakash, Ganesh Sanjeev, K.B. Vijay Kumar, K. Siddappa, B.K. Nayak, A. Saxena

Annals of Nuclear Energy 38 (2011) 757–766

6. Analysis of coolant void reactivity of Advanced Heavy Water Reactor (AHWR) through isotopic reaction rates,

Umasankari Kannan and S. Ganesan

Nucl. Science and Engineering, 167, Issue 12 (2011) , pp 105-124.

7. Mass-yield distribution of fission products from photo-fission of ^{nat}Pb induced by 2.5 GeV bremsstrahlung

H. Naik, S. Singh, A. Goswami, V.K. Manchanda, S.V. Suryanarayana, D. Raj, S. Ganesan, Md. S. Rahman, K.S. Kim, M.W. Lee, G. Kim, M. –H. Cho, I.S. Ko, W. Namkung

E. Phys. J. A. 47, 37 (2011).

8. Measurement of photo-neutron cross-sections in ^{208}Pb and ^{209}Bi with 50-70 MeV

Bremsstrahlung.

H. Naik, S. Singh, A. Goswami, V.K. Manchanda, G. Kim, K.S. Kim, M. –W. Lee, Md.S. Rahman, D. Raj, S.V. Suryanarayana, S. Ganesan, M. –H. Cho, W. Namkung

Nucl. Instruments Methods in Phys. Research B 269, 1417 (2011).

9. Mass distribution in the bremsstrahlung-induced fission of ^{232}Th , ^{238}U and ^{240}Pu .

H. Naik, V.T. Nimje, D.Raj, S.V. Suryanarayana, A.Goswami, Sarbjit Singh, S.N. Acharya, K.C. Mital, S. Ganesan, P. Chandrachoodan, V.K. Manchanda, V. Venugopal, S. Banarjee,
Nucl Phys. A 853 (2011) 1.

10. $^{233}\text{Pa}(2n_{\text{th}}, f)$ cross-section determination using a fission track technique.

H. Naik, P.M. Prajapati, S.V. Suryanarayana, P.N. Pathak, D.R. Pravu, V. Chavan, D. Raj, P.C. Kalsi, A.Goswami, S. Ganesan and V.K. Manchanda
Eur. Phys. J. A 47,100 (2011).

11. Measurement of the neutron reaction cross-section of ^{232}Th using the neutron activation technique.

H. Naik, P.M. Prajapati, S.V. Suryanarayana, K.C. Jagadeesan, S.V. Thakare, D. Raj, V.K. Mulik, B.S. Sivashankar, B.K. Nayak, S.C. Sharma, S. Mukherjee, Sarbjit Singh, A. Goswami, S. Ganesan and V.K. Manchanda
Eur. Phys. J. A 47, 51 (2011).

12. Measurement of the neutron capture cross-sections of ^{232}Th at 5.9 MeV and 15.5 MeV

P.M. Prajapati, H. Naik, S.V. Suryanarayana, S. Mukherjee, K.C. Jagadeesan, S.C. Sharma, S.V. Thakre, K.K. Rasheed, S. Ganesan and A.Goswami
Eur. Phys. J. A (2012) 48 35

13. Systematic study of (n, p) reaction cross sections from the reaction threshold to 20 MeV

B. Lalremruata, N. Otuka, G. J. Tambave, V. K. Mulik, B. J. Patil, S. D. Dhole, A. Saxena, S. Ganesan, and V. N. Bhoraskar
Phys. Rev. C 85, 024624 (2012)

14. Measurement of $^{232}\text{Th}(n, \gamma)^{233}\text{Th}$, $^{98}\text{Mo}(n, \gamma)^{99}\text{Mo}$, $^{186}\text{W}(n, \gamma)^{187}\text{W}$, $^{115}\text{In}(n, \gamma)^{116\text{m}}\text{In}$ and $^{92}\text{Mo}(n, p)^{92\text{m}}\text{Nb}$ reaction cross sections in the MeV range

Megha Bhike, B. J. Roy, A. Saxena, R. K. Choudhury, S. Ganesan
Nuclear Science and Engineering, 170, 1–10 ~2012

15. Fission Neutron Spectrum Sensitivity Study for the Case of Advanced Heavy Water Reactor

Anek Kumar and S. Ganesan
Nuclear Science and Engineering (in press)

16. Measurement of $^{232}\text{Th}(n, \gamma)$ and $^{232}\text{Th}(n, 2n)$ cross-section at neutron energies of 13.5, 15.5 and 17.28 MeV using neutron activation techniques

Sadhana Mukerji, H. Naik, S.V. Suryanarayana, S. Chachara, B.S. Shivashankar, V. Mulik, Rita Crasta, Sudipta Samanta, B.K. Nayak, A. Saxena, S.C. Sharma, P.V. Bhagwat, K.K. Rasheed, R.N. Jindal, S. Ganesan, A. Goswami and P.D. Krishnani
paper accepted for publication in *Pramana, Journal of Indian Academy of Sciences*.

FUTURE PLANS

- Procurement of gamma spectrometry system for dedicated use by NDPCI at 40 lakhs in 2011-12 is foreseen.
- Measurement of prompt neutron spectra for $^{232}\text{Th}(n,f)$
- Recruitment of students, post-docs, trainees has been proposed.
- Web-design for NDPCI are in formulation stage.
- The 5th Indian EXFOR compilation workshop is planned for in Feb., 2013 at BHU. It is under informal discussions. Application for funding will be made.
- A workshop on surrogate reaction is proposed by Dr. Surjit Mukherjee of Baroda University to be held this year.