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CRITERION VII – INSTITUTIONAL VALUES AND BEST PRACTICES

7.3. INSTITUTIONAL DISTINCTIVENESS

PRIMARY

1.Centre for Nonlinear Science (CeNSc) – Two Decades of Excellence in Research

Centre for Nonlinear Science (CeNSc) was established in the year 2005 under the auspices of the Department of Science and Technology with a seed grant of Rs. 8 Lakhs. The focus of the CeNSc is to investigate the impact of non-linearity in different branches of physics like hydrodynamics, optics, condensed matter physics etc. Situated in a semi urban area which stands isolated from hardcore research activities, CeNSc has grown into a full-fledged premier research institute with special emphasis on "Theoretical Physics/ Nonlinear Dynamics" on the lines of Institute of Mathematical Sciences, (I MSc), Chennai in a span of two decades. CeNSc has so far completed ten major sponsored research projects funded by DST, UGC, DAE-NBHM and CSIR worth to the tune of around 2 crores and has entered into thriving collaboration with leading institutes in India and abroad.

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SPONSORED PROJECTS HISTORY

S.No.	Funding Agencies	Title of the Project	Duration	Amount
1.	DST-CURIE	DST Consolidation of University Research for Innovation and Excellence in Women Universities (CURIE)	(2022-2025). (Ongoing)	Rs. 40,95,360/-
2.	DAE-NBHM	Investigation of PT-Symmetric and non PT-Symmetric variable coefficient NonlinearSchrodinger type equations	2021-2024 (Ongoing)	Rs. 15,87,400/-
3.	CSIR	Exploring the Ultracold Atom Dynamics Through PT Symmetry	2019-2022. (Completed)	Rs. 35,68,910/-
4.	DAE-NBHM	A New Algorithm to study the variable coefficient Gross-Pitaevskii (GP) Type equations	2015-2018 (Completed)	Rs. 13,72,000/-
5.	CSIR	"Ultra cold atoms dynamics through a versatile analytical and Numerical approach	2015-2018 (Completed)	Rs. 11,50,000/-
6.	DST	Dynamics of Bose Einstein condensates with both short range and Long range interactions	2013-2015 (Completed)	Rs. 12,44,400/-
7.	UGC	Penetrating into the domain of the Bose Einstein Condensates	2011-2014 (Completed)	Rs. 9,36,800/-
8.	DAE – NBHM	Exploring the dynamics of Bose-Einstein Condensates through a new analytical approach	2011-2014 (Completed)	Rs. 11,68,180/-
9.	DST	Identification of Localized Excitations in Bose-Einstein condensates and their Interaction	2008-2011 (Completed)	Rs. 10,16,148/-
10.	UGC	Minor Research Project	2008-2010 (Completed)	Rs. 80,000/-
11.	DST	Localized Coherent Excitationsin (2+1) Dimensional Nonlinear Systems	2005-2008 (Completed)	Rs. 8,10,600/-

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IT INFRASTRUCTURE AT CeNSc

S.No	Workstations with details	Configurations	NUMBER	Rate
1.	I9 Workstation	Intel Core i9 @9980x Processor, LGA 2066 X299 Series Motherboard, 64GB DDR 3000 RAM (4*16GB), 1 TB SSD Hard drive, 2 TB SATA Harddisk@7200RPM, Liquid Cooler(H100i), Nvidia Geforce GTX-1660 6G Graphics, Corsair 175R Cabinet, USB Keyboard & Optical Mouse, 27" 4k LED Monitor	1	3,05,500/-
2.	Z600 Workstation	Intel XEON E5607 2.26 SMB / 10664C CPU-1 Intel XEON E5607 2.26 SMB / 10664C CPU-2	1	1,97,000/-
3.	Z620 Workstation	HP Z640 Country Kit, HP Z 620 800W 90 Percent Efficient Chanis, HP Single Unit Packaging, 16GB DDR3 RAM, 1TB, 7200 RAM SATA HDD, HP USB Keyboard and Optical Mouse, Nivida QUADRO 410 512MB Graphics Card, HP 20" LED Monitor	1	3,56,400/-
4.	Z640 Workstation	HP Z640 Country Kit, HP Z640 9254 90 Percent Efficient Chanis, HP Linux Installer Kit, HP Single Unit Packaging 2k intel Xeon E5-2620V96 Core Processor @ 2.4GHz 1TB 7200 RPM SATA 1st HDD 32GB DDR-2139(2*16GB) 2CPU registered RAM Nvidia 1 GB Graphics Card HP USB Keyboard, HB USB 1000DDPI Laser mouse 9.5 MMSLIM DVD-ROM 1st ODD HP	1	3,49,000/-
5.	Book - Pro	Apple Mac	1	1,00,000/-
6.	Scanner	Cannon Scanner	1	3,900/-
7.	Laptop	HP Pavilion Laptop	1	53,499/-

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S.No	Workstations with details	Configurations	NUMBER	Rate
8.	I Pad	Apple I pad	1	90,800/-
9.	Printers	➢ CANON LBP3300 DUPLEX PRINTER ➢ EPSON L3150 All in one Ink Tank Printer ➢ CANON IMAGE CLASS MF 4890 dw	3	11,000/- 13,800/- 42,000/-
10.	Xerox Machine	SHARP AR 5516 Digital MFD	1	37,856/-
11.	Fax Machine	BROTHER Fax Cum Telephone Sno C8K 446002	1	6,200/-
12.	Air Conditioner	LG Air Condition (Model: LSB24K1RAB1)	1	35,500/-
13.	UPS	Microtek on-line UPS Max + 3KVA/72VDC ISO TX (Serial Nos: 23B20C4B34D00711)	1	1,12,000/-

PUBLICATIONS

International		National		Others
Journals	Conferences	Journals	Conferences	Books / Chapters / Monographs / Manuals
77	5	1	2	-

Citation Matrix

	Citations	h - index	i10 index
Google Scholar	1538	21	43
Scopus	1255	19	-
Web of Science	1238	19	-

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    R. Radha, Vijayalakshmi Sethuraman, "Bayesian Optimization of Bose-EinsteinCondensates", **Scientific Reports (Nature) 11, 5054 (2021).**

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69. Tamil Arasan Bakthavatchalam, Selvakumar Murugan, Suriyadeepan Ramamoorthy,Malaikannan Sankarasubbu, **R. Radha,** Boris A. Malomed and Vijayalakshmi Sethuraman, "Primer on solving differential equations using Machine learning techniques", *Romanian Report in Physics* **74**, 113 (2022).

70. S. Sabari, R. KishorKumar, **R. Radha**, P. Muruganandam, "Stability of Polariton-ExcitonBose-Einstein Condensate", *Phy. Rev. B* 105, 224315 (2022).

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7) M. Lakshmanan and **R. Radha**, Solitons and Inverse Scattering in (2 + 1) dimensions, Proceedings of the Symposium on plasma science and Technology, K. P. Maheswari (Ed.) (Wiley – Eastern, New Delhi, 1992).

BOOK PUBLISHED:

➢ P. Muruganandam and **R. Radha**, "An Introduction to Ultracold Atoms with Analytical andNumerical Methods " UK, 2023 (Under Preparation).

ACTIVITIES RELATING TO PROMOTION OF SCIENCE IN TAMIL NADU

Centre for Nonlinear Science (CeNSc), a premier research institute established by **Dr. R. Radha** came into being in 2005 under the patronage of Department of Science and Technology (DST). In a span of over a decade and a half, it has now grown into a full-fledged, internationally reputed research institute with infrastructural facilities on par with the Institute of Mathematical Sciences (IMSc), Chennai. In a semi urban town like Kumbakonam which is far away from the core research activities, CeNSc is offering a huge platform for motivated young researchers to explore their potential in nonlinear science. CeNSc has so

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far completed eight major research projects sponsored by DST, DAE-NBHM, CSIR and UGC and there are two ongoing major research projects funded by CSIR and DAE-NBHM. **Dr. R. Radha** has so far mobilized resources to the tune of more than 1.5 crores through these projects for carrying out research in nonlinear science. CeNSc under the stewardship of **Dr. R. Radha** has entered into thriving collaborations with reputed research institutes in India and abroad (Japan, China, South Korea, New Zealand, UK,Israel, UAE, Romania, Spain, Serbia etc).

On the teaching front, **Dr. R. Radha** had recently organized a webinar on " Virtual Physics Laboratory" as a lockdown initiative and the virtual contents were uploaded in (https://youtu.be/LYiVTFQb4Uc) for the benefit of Physics teachers and Undergraduate/Postgraduate students.

This will certainly help Physics teachers across the country to take laboratory experiments to the doorstep of the students virtually.

DETAILS OF BENEFICIARIES

Name of the Student	Area of Research	Name of the University/ Institute	Present Status
V.RAMESH KUMAR	Scalar Bose – Einstein Condensates & their Dynamics	Bharathidasan University, Tiruchirappalli.	Asst.Professor, Velammal Engineering College, Chennai.
P.S.VINAYAGAM	Vector Bose–Einstein Condensates & their stability	Bharathidasan University Tiruchirappalli.	Asst.Professor, PSG College of Arts and Science, Coimbatore.

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J.B.SUDHARSAN	Collisionally Inhomogenous Bose-Einstein Condensates	Bharathidasan University Tiruchirappalli.	Asst.Professor, Chennai Institute of Technology(CIT), Chennai.
Mr.V. RAJADURAI	Spinor Bose Einstein Condensates	Bharathidasan University Tiruchirappalli.	-
Dr.R.TAMIL THIRUVALLUVAR	BECs in Discrete Media (Post Doctoral Fellowship)	Bharathidasan University Tiruchirappalli.	Guest Lecturer Kundavai Naachiar Govt.College for Women(A), Thanjavur.
Dr.S.BHUVANESWARI	Quantum Information Science	Bharathidasan University, Tiruchirappalli.	-
Dr.S. SABARI	Bose Einstein Condensates with Long range interactions (Post Doctoral Fellowship)	Bharathidasan University Tiruchirappalli.	Post Doctoral Fellow, University of Sao Paulo, Brazil.
Mr.B. TAMILARASAN	Machine Learning	Bharathidasan University Tiruchirappalli.	Software Engineer, SAAMA AI Lab, Chennai
Mr.K. SUBRAMANIAN	Truncated Painleve Approach	Bharathidasan University Tiruchirappalli.	Assistant Professor, S.R.M Institute, Chennai
MS.R. SARANYA	(2+1) Nonlinear pdes	Bharathidasan University Tiruchirappalli.	-
MS.G. PONMALAR	BECs in Discrete Media	Bharathidasan University Tiruchirappalli.	-
MR.C. SENTHIL KUMAR	(2+1) Dimensional Soliton	Bharathidasan University Tiruchirappalli.	Professor & Head Vinayaka Mission's Deemed University, Salem.

TIE - UPS AND COLLABORATIONS:

(a). International Collaboration

1) Shanghai Jiao Tong University Shanghai, China
2) University of Tokyo, Tokyo, Japan
3) University of Glasgow, UK

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4) University of Kung Kee, Seoul, South Korea

5) University of Bucharest, Romania

6) University of Serbia, Serbia

7) University of Beijing, Chinese Academy of Sciences, Beijing, China

8) University of Sau Paulo, Brazil

9) University of Tel Aviv. Israel

10) University of Salamanca, Spain

11) University of AL Ain, UAE

12) Institute of Physics, Russian Academy of Science, Makhachkala 367 003, Russia

13) University of Cameroon, Cameroon, South Africa

14) University of Dunedin, New Zealand

15) Instituto de Alta Investigacion, Universidad de Tarapaca, Casilla 7D, Arica 1000000, Chile.

(b). National Collaboration

1) IMSc, Chennai.

2) IISER, Kolkata.

3) Central University of Pondicherry, Pondicherry.

4) Bharathidasan University, Tiruchirappalli.

5) SASTRA, Thanjavur

6) Presidency College, Chennai

7) VMKVEC, Salem

8) SAMA Artificial intelligence Lab, Chennai

9) Velammal Engineering College, Chennai

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(c). Distinguished Visitors

S.No	Name	Country
1	Dr.Alexandru I Nicolin	University of Bucharest, Romania.
2	Dr. Mihelea Carina Raportaru	University of Bucharest, Romania.
3.	Prof. Yvehe Kosman Swarchbach	Ecole Polytechnique, Paris.
4	Prof. M Lakshamanan	Bhatnagar Laureate 1992, Bharathidasan University, India.
5	Prof. K Prochezhian	Pondicherry University, India.
6	Dr. P Muruganandam	Bharathidasan University, India.
7	Dr .M Senthilvelan	Bharathidasan University, India.
8.	Dr. S. Lakshmi Bala	IIT, Madras
9.	Dr. Prof. R.Sriram	University of Madras
10.	Prof. V.Balakrishnan	IIT, Chennai
11.	Prof.R.Simon	IMSc, Chennai (Bhatnagar Laureate 2001)
12.	Prof. K.P.N. Murthy	IGCAR, Kalpakkam
13.	Prof. Dr. N.Bhaskaran	NIT, Tiruchirappalli

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2. DST – CURIE INSTRUMENTATION FACILITY (D – CIF)

ABOUT D-CIF

DST-CURIE Instrumentation Facility (D-CIF) at Government College for Women(Autonomous), Kumbakonam was established in 2022 under the auspices of Department of Science and Technology(DST), Government of India. The focus of D-CIF is to facilitate students hailing from rural areas to get an access to sophisticated equipments with nominal charges in their pursuit of higher education. D-CIF which is equidistant from Annamalai University, Chidambaram and Bharathidasan University, Tiruchirappalli has become a boon to the students hailing from the neighbourhood of the college without having to travel around 100 kms from their residence

PRINCIPAL INVESTIGATOR

1. **Dr.R.Radha Principal Investigator**
   E-mail :radha_ramaswamy@gcwk.ac.in

CO- INVESTIGATOR

2. **Dr.F.Kurus Malai Selvi, Co-Principal Investigator**
   E-mail :f.kurusmalaiselvi@gcwk.ac.in

PRINCIPAL
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SANCTION ORDER

भारत सरकार
विज्ञान और प्रौद्योगिकी मंत्रालय
विज्ञान और प्रौद्योगिकी विभाग
टक्नोलॉजी भवन, नया महरौली मार्ग
नई दिल्ली-110 016

GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
TECHNOLOGY BHAWAN, NEW MEHRAULI ROAD
NEW DELHI-110 016

Er. Pawan Kumar
Officer-in-charge
CURIE Programme
Phone: 011-26590290
E-mail: pawan.kumar@nic.in

Dated .... 15 March, 2022

D.O. No. DST/CURIE-PG/2022/54

Sub: *"CURIE Core Grant for Women PG Colleges"*

Dear Dr. Radha Ramaswamy,

This is with reference to your presentation made in the Programme Advisory Committee (PAC) meeting of 'Consolidation of University Research for Innovation and Excellence (CURIE)' Programme.

I am pleased to inform you that PAC has recommended your proposal for **3 years'** support under CURIE of WISE-KIRAN Division. The list of recommended components by PAC are mentioned below:

Recurring:

Human Resource:	Project Assistant @Rs.22,000/- (consolidated)
Infrastructure Facilities:	Rs. 4.00 lakh (including one smart class)
Consumables:	Rs. 5.00 lakh
Contingencies:	Rs. 1.00 lakh
Travel:	Rs. 2.00 lakh(including travel of Expert-Mentor)
Networking Facilities:	Rs. 2.00 lakh

Non-Recurring:
Equipment: Online UPS, Photocatalytic Reactor, Portable Photoluminescence Spectrometer, UV Visible Spectrometer (Rs. 16.00 lakh)

In order to further process your case for issue of financial sanction, you are requested to submit the following documents at the earliest:

- Certificate from the Head of the Institution where the said **project** will be implemented (in attached format);
- Duly signed Conflict of Interest Policy (in attached format);
- Target and Timeline (in attached format);
- Name of the official in the host institution in whose name grant should be sent;
- PFMS-Unique Code of host institute and Darpan Portal ID (in case of NGO);
- **Interest bearing Bank Account** details of the host institute including **Institute name as per bank record, Account No., Bank name, Branch and IFSC code** endorsed by the **Registrar/Finance Officer/Competent authority**;
- Certificate from Insitute's authority regarding use of EAT (Expenditure Advance Transfer) module in PFMS (*submit screenshot of PFMS EAT Module of institute*)
- Quotation/s and consolidated list with price for approved pieces of equipment;
- Name, address, contact details and bio-data of nodal officer at college for CURIE Project.

As per GFR 17, it is mandatory to keep GOI grant in interest bearing account and reflect interest in Utilization Certificate. Project fund would not be transferred in failing of interest bearing account details.

We shall process your case for financial sanction once we receive the above documents/clarifications from you. Please note that a project starts only after **it is accorded financial sanction by DST.**

Looking forward to receiving your reply and with best regards.

Yours sincerely,

(Pawan Kumar)

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UV VISIBLE SPECTROPHOTOMETER

DESCRIPTION
- ✓ 207-25700-58 New Shimadzu UV-VIS Spectrophotometer, UV-1900i
- ✓ 071-60845-01 CORD SET, 3VTJ1/3VTJA2.4M
- ✓ 226-89001-00 UV 10mm Cell GS Kit
- ✓ USB Cable

USES
- ✓ It is the best analytical tool for quantitative and qualitative analysis of samples for various research field. It is easy to use, reliable, robust and fast.

STATUS : ACTIVE

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PHOTO LUMINESCENCE PL 100

DESCRIPTION

✓ **MARUTEK MODEL : PL 100-Portable Photoluminescence Spectrometer**

USES

✓ **To determine Band Gap, impurity levels and defect detection, Recombination mechanisms material quality and molecular structure and crystallinity.**
✓ **Research and Development Laboratories It is used to carry out a photochemical reaction, water splitting and photo chlorination reaction.**

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IV Cycle of Accreditation

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PHOTO CATALYTIC REACTOR (PCR)

DESCRIPTION

CLASSIC MODEL UN VISIBLE LAMP 450W
INBUILT UV/VISIBLE LAMP
POWER SUPPLY WATT - 450W
DIGITAL MAGNETIC STRRER WITH TIMER
OUTER METAL SHELL (SAFETY CABINET)

USES

It is a device that uses light (photons) to perform a chemical reaction.

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TARIFF STRUCTURE

S.NO	FACILITY	PG-STUDENTS	RESEARCH SCHOLAR	FACULTY
1	UV-VISIBLE Spectrophotometer	75/-	100/-	125/-
2	Photoluminescence Spectroscopy	100/-	150/-	175/-
3	Photo Catalytic Reactor	1250/- Per Sample	1750/- Per Sample	1750/- Per Sample
		(0-30) Minutes- Rs.250 (30-60) Minutes- Rs.250 (60-90) Minutes- Rs.250 (90-120) Minutes- Rs.250 (120-150) Minutes- Rs.250	(0-30) Minutes- Rs.350 (30-60) Minutes - Rs.350 (60-90) Minutes- Rs.350 (90-120) Minutes- Rs.350 (120-150) Minutes- Rs.350	

✓ Payment can be made through UPI /Netbanking and the details are given below:

Bank   : State Bank of India
Branch   : Kumbakonam
Address   : 138. 139,TSR Big Street
IFSC   : SBIN0000864
CIF NO.   : 80743450175
Account No. : 10923056199
Account Name : CHAIRMAN OLD STUDENTS' ASSOCIATION

The Characterization fee can also be paid directly into the above account.

Applications should be accompanied by evidence of payment.

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SECONDARY – DAY CARE CENTRE

The college prides on the fact that it is the first women's college started in the state in the post independent India.The college is located within a kilometer from the bus stand and the rail way station and students find no difficulty in reaching the college on foot. There is a daycare centre inside the premises and both students and staff leave their kids safely there. This helps students continue their studies in spite of child birth and motherhood. The Day Care Centre was established in the academic year (2008 - 2009) under the UGC Merged Schemes for the children of both students and staff with the support of two senior staff members and one babysitter. A meager amount is collected from the beneficiaries to meet out the expenses. A Day Care Centre is accommodated in a spacious room with all the basic amenities like refrigerator, bureau, Cot, Mixer, Stove, Cradle, Toys, Mats, Wet Grinder and many attractive toys for the children to play like Swings, See-saw and Toy Car etc. The Windows of the room are fitted with Mosquito net; Separate Lavatory is provided to the Day Care Centre. Chart bearing the letters of the alphabets, fruits and vegetables, daily habits are displayed on the walls on the crèche.

Kumbakonam, Tamil Nadu, India
Day Care centre Government College for women
(A) Kumbakonam
Lat 10.926907°
Long 79.371791°
01/03/23 01:13 PM GMT +05:30

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