

Department/Section: Physics

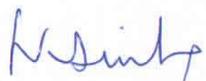
NAAC Metric

3.5.2 Revenue generated from consultancy and corporate training during 2020-2021 (INR in Lakhs) (15)

3.5.2.1: Total amount generated from consultancy and corporate training year wise during 2020-2021 (INR in lakhs)

Revenue generated from consultancy during 2020-2021

Name of the consultant	Name of consultancy project	Consulting/Sponsoring agency with contact details	Revenue generated (INR in Lakhs)		
			Year		
Nil	Nil	Nil	Nil	Nil	
Revenue generated from corporate training during the last five years					
Names of the teacher-consultants/corporate trainers	Title of the corporate training program	Agency seeking training with contact details	Year	Revenue generated (amount in rupees)	Number of trainees
Nil	Nil	Nil	Nil	Nil	Nil



Signature of Head
(Prof. S. K. Sinha)
Department of Physics
BIT Mesra

Head
Department of Physics
Birla Institute of Technology
Mesra, Ranchi-835215
Jharkhand, INDIA

Department/Section: Physics

NAAC Metric 3.4.3 & 3.4.3.1

3.4.3 Number of Patents published/awarded during 2020-2021 (10)

3.4.3.1: Total number of Patents published/awarded year wise during 2020-2021

Name of the Patenter	Patent Number	Title of the patent	Year of Award of patent
Nil	Nil	Nil	Nil



Signature of Head
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Department of Physics
BIT Mesra

Head
Department of Physics
Birla Institute of Technology
Mesra, Ranchi-835215
Jharkhand, INDIA

Department/Section: Physics

NAAC Metric 6.3.2 Average percentage of teachers provided with financial support to attend conferences / workshops and towards membership fee of professional bodies during 2020-2021 (10)

Year	Name of teacher	PAN	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided	Amount of support (in INR)
2020	DILIP KR SINGH	AXKPS4249L		Association for computing machinary	1770/-


Signature of Head
(Prof. S. K. Sinha)
Department of Physics
BIT Mesra

Head
Department of Physics
Birla Institute of Technology
Mesra, Ranchi-835215
Jharkhand, INDIA



Dr. Dilip Kumar Singh <dilipsinghnano1@gmail.com>

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2 messages

bonifacio_rep@acm.org <bonifacio_rep@acm.org>
To: dilipsinghnano1@gmail.com

Wed, Jun 16, 2021 at 2:10 AM

Member No. 2182393

Dear Dr Dilip Kumar Singh:

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- * Code Reviews - From Bottleneck to Superpower with Michaela Greiler, <https://learning.acm.org/techtalks/codereviews>
- * It's Time Deep Learning Learned from Software Engineering with Jeremy Howard, <https://learning.acm.org/techtalks/fastai>

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- * President of Harvey Mudd College and Former ACM President Maria Klawe on creating a culture of diversity in academic computing, <https://learning.acm.org/bytecast/ep10-maria-klawe>
- * ACM Grace Murray Hopper Award recipient Jeffrey Heer on data visualization and commercializing academic research, <https://learning.acm.org/bytecast/ep11-jeffrey-heer>

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Dr. Dilip Kumar Singh <dilipsinghnano1@gmail.com>
To: chandrashekhar singh <ashekhari4m@gmail.com>

Wed, Jun 16, 2021 at 7:50 AM

[Quoted text hidden]

Department/Section: Physics

NAAC Metric

3.1.6 Percentage of departments with UGC-SAP, CAS, DST-FIST, DBT, ICSSR and other recognitions by national and international agencies (Data for 2020-2021 year) (5)

3.2.1 Extramural funding for Research (Grants sponsored by the non-government sources such as industry, corporate houses, international bodies for research projects) endowments, Chairs in the University during the last five years (INR in Lakhs) (5)

3.2.2 Grants for research projects sponsored by the government agencies during the last five years (INR in Lakhs) (10)

2020-21

3.2.3 Number of research projects per teacher funded by government and non-government agencies during the last five years (5)

2020-21

Name of the Scheme/Project/ Endowments/ Chairs	Name of the Principal Investigator/ Co Investigator (if applicable)	Name of the Funding agency	Type (Government/Non-Government)	Department	Year of Award	Funds provided (INR in lakhs)	Duration of the project
None							



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Department of Physics
Birla Institute of Technology
Mesra, Ranchi-835215
Jharkhand, INDIA

Department/Section: Physics

NAAC Metric 3.1.2The institution provides seed money to its teachers for research (average per year INR in Lakhs) (3)

3.1.2 The institution provides seed money to its teachers for research (average per year INR in Lakhs) (3)

Name of the teacher provided with seed money	The amount of seed money	Year of receiving	Link to the policy document for Sanction of seed money / grants for research from the institution
Nil	Nil	Nil	Nil



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BIT Mesra

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Mesra, Ranchi-835215
Jharkhand, INDIA

Department/Section: Physics

NAAC Metric 3.4.2

3.4.2 The institution provides incentives to teachers who receive state, national and international recognitions/awards

1. Commendation and monetary incentive at a University function
2. Commendation and medal at a University function
3. Certificate of honor
4. Announcement in the Newsletter / website

Name of full time teachers receiving awards from state level, national level, international level	Year of Award	PAN	Designation	Name of the award, fellowship, received from Government or Government recognised bodies	Name of the Awarding Agency	Incentives/Type of the incentive given by the HEI in recognition of the award	Link to the relevant document
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil



Signature of Head
(Prof. S. K. Sinha)
Department of Physics
BIT Mesra

Head
Department of Physics
Birla Institute of Technology
Mesra, Ranchi-835215
Jharkhand, INDIA

Department/Section: Physics

NAAC Metric 6.3.4 Average percentage of teachers undergoing online/ face-to-face Faculty Development Programmes (FDP)during 2020-2021(Professional Development Programmes, Orientation / Induction Programmes,Refresher Course, Short Term Course etc.,)
(8)

Name of teacher who attended	Title of the program	Duration (from – to)	Page No.
Dr. Dilip Kumar Singh	1st Faculty Induction Programme	26-11-2020- 23-12-2020	1
Dr. Sanat Mukherjee	Indus Synchrotrons User's Meeting (ISUM-2)	28-07-2020- 29-07-2020	2
Dr. Sanat Mukherjee	FDP on Delivering Online Course using Canvas LMS	27-07-2020- 05-08-2020	3
Dr. MadhuPriya	1st Faculty Induction Programme	03-03-2021- 30-03-2021	4
Dr. MadhuPriya	FDP on Inclcating universal human values in technical education	07-06-2021- 11-06-2021	5
Dr. MadhuPriya	FDP on Cyber security	08-02-2021- 12-02-2021	6
Dr. SaurabhLahiri	1st Faculty Induction Programme	26-11-2020- 23-12-2020	7
Dr. Dilip Kumar Singh	FDP on Sensor Technology	21-09-2020- 25-09-2020	8
Dr. Dilip Kumar Singh	FDP on Photonics	28-09-2020- 02-10-2020	9
Dr. Nishi Shrivastava	FDP on Artificial Intelligence and Machine Learning in Healthcare	27-27-2020- 31-07-2020	10
Dr. Nishi Shrivastava	FDP on Earth system science for society"	30-11-2020- 05-12-2020	11
Dr. Nishi Shrivastava	FDP on Matlab& Its applications in AI & ML	19-05-2020-	12

h

		26-05-2020	
Dr. Nishi Shrivastava	AI & DATA Analytics with MATLAB	08-06-2020- 15-06-2020	13
Dr. Nishi Shrivastava	FDP on Internet of Things	04-01-2021- 08-01-2021	14
Dr. Nishi Shrivastava	FDP on Research Methodology	07-12-2020- 12-11-2020	15
Dr. Nishi Shrivastava	Online GIS Program using QGIS	07-09-2020- 27-09-2020	16
Dr. SaurabhLahiri	FDP on Cyber security and Investigation tools	11-09-2020- 15-09-2020	17
Dr. SaurabhLahiri	FDP on Quantum Computing	19-10-2020- 23-10-2020	18

S. K. Sinha

Signature of Head
(Prof. S. K. Sinha)
Department of Physics
BIT Mesra

Head
Department of Physics
Birla Institute of Technology
Mesra, Ranchi
Jharkhand, INDIA



UNIVERSITY GRANTS COMMISSION
HUMAN RESOURCE DEVELOPMENT CENTRE (HRDC)
RANCHI UNIVERSITY, RANCHI
(2020-2021 ONLINE COURSES)



UGC-SPONSORED
GURU-DAKSHTA
1ST FACULTY INDUCTION PROGRAMME (FIP)

This is to certify that

Dr. DILIP KUMAR SINGH

Assistant Professor

Department of Physics

Birla Institute of Technology Mesra, Ranchi, Jharkhand

Participated in the '1st Faculty Induction Programme of 170 hours'

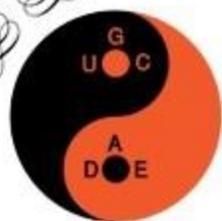
from 26/11/2020 to 23/12/2020

and obtained Grade - A

Tyoti Kumar
(DIRECTOR)

AK Lal
(COURSE CO-ORDINATOR)

R K Pandey
(VICE-CHANCELLOR)



Indus Synchrotrons Users' Meeting (ISUM-2)

(WEB meeting)

Organized by

Raja Ramanna Centre for Advanced Technology, Indore

&

UGC-DAE Consortium for Scientific Research, Indore

July 28-29, 2020

Certificate of participation



This is to certify that.....Dr. Sanat. Kumar Mukherjee.....
from.....Birla Institute of Technology.....
has participated in the **Indus Synchrotrons Users' Meeting (ISUM-2)** WEB meeting held
during July 28-29, 2020 with registration number.....FAC/43/33/90..... . This
e-certificate does not require any signature and it can be verified by sending an e-mail
to: conference@csr.res.in.

Dr. D. M. Phase
Convener & Chairman, ISUM-2
Centre-Director,
UGC-DAE CSR, Indore

Dr. Mukul Gupta
Co-Convener, ISUM-2
UGC-DAE CSR, Indore

Dr. R. J. Choudhary
Co-Convener, ISUM-2
UGC-DAE CSR, Indore



TEQIP III

CERTIFICATE

OF PARTICIPATION

THIS CERTIFICATE IS AWARDED TO

Dr. Sanat Kumar Mukherjee

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI

*For successfully completing the Two Week online Faculty
Development Program on Delivering Online Course using Canvas LMS
(July 27th to August 5th, 2020)*

Dr. P. Kumar
**TECHNICAL
COORDINATOR**

Dr. J. Ghose
**COURSE
COORDINATOR**

Dr. K. Mukhopadhyay
**TEQIP- III
COORDINATOR**





UNIVERSITY GRANTS COMMISSION
HUMAN RESOURCE DEVELOPMENT CENTRE (HRDC)
RANCHI UNIVERSITY, RANCHI
(2020-2021 ONLINE COURSES)



UGC-SPONSORED
GURU-DAKSHTA
4th FACULTY INDUCTION PROGRAMME (FIP)

This is to certify that

MADHU PRIYA

Assistant Professor, Department of Physics
Birla Institute of Technology, Mesra, Ranchi
Jharkhand

Participated in the '4th Faculty Induction Programme of 170 hours'
from 03/03/2021 to 30/03/2021
and obtained Grade - A

Jyoti Kumar
(DIRECTOR)

AK Lal
(COURSE CO-ORDINATOR)

Kamini Kumar
(VICE-CHANCELLOR)



ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
NELSON MANDELA MARG, VASANT KUNJ, NEW DELHI

Certificate of Participation

This is to certify that **Dr. Madhu Priya** from **Birla Institute of Technology Mesra, Ranchi** has participated and successfully completed the **5-day online FDP** on the theme **“Inculcating Universal Human Values in Technical Education”** organized by **All India Council for Technical Education(AICTE)** from **7 June 2021 to 11 June, 2021.**

Dr. Rajneesh Arora
Chairman
National Coordination Committee for Induction Program

Prof. Rajive Kumar
Member Secretary, AICTE

No:ATAL/2021/1612523538



ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Nelson Mandela Marg, Vasant Kunj, New Delhi – 110 070

AICTE Training And Learning (ATAL) Academy

Certificate

This is certified that **Madhu Priya, Assistant Professor** of **Birla Institute of Technology Mesra, Ranchi-835215** participated & completed successfully AICTE Training And Learning (ATAL) Academy **Online** FDP on "**Cyber Security**" from **2021-2-8** to **2021-2-12** at **Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya**.

Director ATAL Academies



Coordinator



UNIVERSITY GRANTS COMMISSION
HUMAN RESOURCE DEVELOPMENT CENTRE (HRDC)
RANCHI UNIVERSITY, RANCHI
(2020-2021 ONLINE COURSES)



UGC-SPONSORED
GURU-DAKSHTA

1ST FACULTY INDUCTION PROGRAMME (FIP)

This is to certify that

Dr. SOURABH LAHIRI

Assistant Professor

Department of Physics

Birla Institute of Technology Mesra, Ranchi, Jharkhand

Participated in the '1st Faculty Induction Programme of 170 hours'

from 26/11/2020 to 23/12/2020

and obtained Grade -A

Jyoti Kumar
(DIRECTOR)

AK Lal
(COURSE CO-ORDINATOR)

R K Pandey
(VICE-CHANCELLOR)

No:ATAL/2020/1598887843



ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Nelson Mandela Marg, Vasant Kunj, New Delhi – 110 070

AICTE Training And Learning (ATAL) Academy

Certificate

This is certified that **DILIP K SINGH**, Assistant Professor of **BIRLA INSTITUTE OF TECHNOLOGY** participated & completed successfully AICTE Training And Learning (ATAL) Academy Online FDP on "Sensors Technology" from 2020-9-21 to 2020-9-25 at Tripura University.

Director ATAL Academies



Coordinator

No:ATAL/2020/1597392509



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Nelson Mandela Marg, Vasant Kunj, New Delhi - 110 070

AICTE Training And Learning (ATAL) Academy

Certificate

This is certified that **DILIP KUMAR SINGH**, Assistant Professor of Birla Institute of Technology Mesra participated & completed successfully AICTE Training And Learning (ATAL) Academy Online FDP on "Photonics" from 2020-9-28 to 2020-10-2 at C.V. Raman Global University (Former C. V. Raman College of Engineering).

Director ATAL Academies



Coordinator

TEQIP III Sponsored
One week Online Faculty Development Programme



E-CERTIFICATE OF PARTICIPATION

This is to certify that ***Dr. Nishi Srivastava*** of **Birla Institute of Technology Mesra, Ranchi** has participated in the Faculty Development Programme on “**Artificial Intelligence and Machine Learning in Healthcare**” jointly organized by the Department of Bioengineering and Electronics & Communication Engineering, Birla Institute of Technology Mesra, 27th- 31st July, 2020

Dr. Koel Mukherjee
Coordinator

Dr. Sitanshu Sekhar Sahu
Coordinator

Dr. Kunal Mukhopadhyay
TEQIP Coordinator

Prerana Educational and Social Trust ®
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E-CERTIFICATE

AWARDED TO

NISHI SRIVASTAVA

Assistant Professor, Department of Physics

Birla Institute of Technology, Mesra, Ranchi

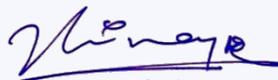
On completion of

One week Online Student and Faculty Development Program on

“EARTH SYSTEM SCIENCE FOR SOCIETY”

Organised By

Department of Civil Engineering during November 30th to December 5th, 2020.



Dr. Vinay D C
Convener



Dr. M N Hiremath
Head of the Dept.



Dr. Chaitanya Kumar M V
Principal

One-week Faculty Development Programme on
“MATLAB & Its applications in AI & ML”

Ref. No: EICT/NITP/85/ECE/ 066 /2020

19th – 26th May, 2020

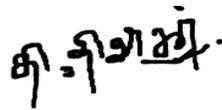
Organized by Electronics & ICT Academies, NIT Patna



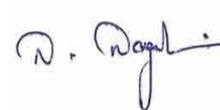
(Supported by Ministry of Electronics and Information Technology (MeitY), Govt. of India)

Certificate of Participation

This is to certify that Mr./Ms./Dr. **NISHI SRIVASTAVA** from **BIRLA INSTITUTE OF TECHNOLOGY, MESRA (RANCHI), JHARKHAND** has participated and completed the Faculty Development Programme on **“MATLAB & Its applications in AI & ML”** organized by Department of ECE, NIT Patna and AEC, Kumbakonam, Tamilnadu under Electronics and ICT Academy, NIT Patna, held from **19th – 26th May, 2020** in online mode under the **“Scheme of financial assistance for setting up of Electronics and ICT Academies”** by the **Ministry of Electronics and Information Technology (MeitY), Government of India.**



Mr. T. Thivagar
Co-coordinator
AEC, Kumbakonam



Mrs. N. Nagalakshmi
Co-coordinator
AEC, Kumbakonam



Dr. Rakesh Ranjan
Coordinator
NIT Patna



Dr. Bharat Gupta
CI, E&ICT Academy
NIT Patna

**One-week Faculty Development Programme on
“AI & DATA Analytics with MATLAB”**

08th – 15th June, 2020

Ref. No: EICT/NITP/90/ECE/ 059 /2020

Organized by Electronics & ICT Academies, NIT Patna



(Supported by Ministry of Electronics and Information Technology (MeitY), Govt. of India)

E& ICT Academy NIT Patna
Certificate of Participation

This is to certify that Mr./Ms./Dr. NISHI SRIVASTAVA from BIRLA INSTITUTE OF TECHNOLOGY, MESRA, Jharkhand has participated and completed the Faculty Development Programme on “**AI & Data Analytics with MATLAB**” organized by Department of ECE, NIT Patna under Electronics and ICT Academy, NIT Patna, held from **08th – 15th June, 2020** in online mode under the “**Scheme of financial assistance for setting up of Electronics and ICT Academies**” by the **Ministry of Electronics and Information Technology (MeitY), Government of India.**



Date of Issue: 15.06.2020



Dr. Rakesh Ranjan
Coordinator
NIT Patna



Dr. Bharat Gupta
Co-Coordinator & CI, E&ICT Academy
NIT Patna

No:ATAL/2020/1608634730



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Nelson Mandela Marg, Vasant Kunj, New Delhi – 110 070

AICTE Training And Learning (ATAL) Academy

Certificate

This is certified that **Nishi Srivastava, Assistant Professor** of **Birla Institute of Technology, Mesra, Ranchi** participated & completed successfully AICTE Training And Learning (ATAL) Academy **Online FDP** on "**Internet of Things (IoT)**" from **2021-1-4** to **2021-1-8** at **G H PATEL COLLEGE OF ENGINEERING & TECHNOLOGY**.

Director ATAL Academies



Coordinator

No:ATAL/2020/1605940592



ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Nelson Mandela Marg, Vasant Kunj, New Delhi – 110 070

AICTE Training And Learning (ATAL) Academy

Certificate

This is certified that **Nishi Srivastava, Assistant Professor** of **Birla Institute of Technology, Mesra, Ranchi** participated & completed successfully AICTE Training And Learning (ATAL) Academy **Online FDP** on "**Research Methodology**" from **2020-12-7** to **2020-12-11** at **IIT Dharwad**.

Director ATAL Academies



Coordinator

Certificate of Completion



This is to certify that, **Nishi Srivastava** has successfully completed **21 days Online GIS Training Program using QGIS**, conducted by the Department of Geography, School of Earth Sciences, Central University of Karnataka, India, jointly with State Institute of Urban Development, Karnataka, India from September 7th 2020 to September 27th 2020.

Dr. B. Mahalingam
Course Director
Central University of Karnataka

Prof. Ali Raza Moosvi
Dean, School of Earth Sciences
Central University of Karnataka

Prof. Mohammed Aslam M A
Head, Department of Geology
Central University of Karnataka

Venkatesh Kadagadakai G
Director, SIUD
Mysuru

H Ramesha
Course Coordinator
SIUD, Mysuru

TEQIP-III Sponsored One-week Online Faculty Development Programme



e- Certificate of Participation

This is to Certify that Sourabh Lahiri of Birla Institute of Technology, Mesra has participated in the Faculty Development Programme on “Cyber Security and Investigation Tools” organized by the Department of Computer Science and Engineering, Birla Institute of Technology, Mesra, from 11th -15th September 2020.

Dr.Kishore Kumar Senapati
Coordinator

Dr.Vandana Bhattacharjee
HOD, CSE & Convenor

Dr.Kunal Mukhopadhyay
TEQIP Coordinator

No:ATAL/2020/1600533920



ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Nelson Mandela Marg, Vasant Kunj, New Delhi – 110 070

AICTE Training And Learning (ATAL) Academy

Certificate

This is certified that **Sourabh Lahiri**, Assistant Professor of **Birla Institute of Technology Mesra** participated & completed successfully AICTE Training And Learning (ATAL) Academy **Online FDP** on "**Quantum Computing**" from **2020-10-19** to **2020-10-23** at **Sri Ramakrishna Engineering Collge**.

Director ATAL Academies



Coordinator

Department/Section: Physics

NAAC Metric

3.7.2 Number of functional MoUs with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years (10)

3.7.2.1: Number of functional MoUs with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years

Organisation with which MoU is signed	Name of the institution/ industry/ corporate house	Year of signing MoU	Duration	List the actual activities under each MOU year wise	Number of students/teachers participated under MoUs
Jharkhand state pollution control board and Ranchi Municipal Corporation		2021	-	City specific interventions and action plan	1


Signature of Head
(Prof. S. K. Sinha)
Department of Physics
BIT Mesra

Head
Department of Physics
Birla Institute of Technology
Mesra, Ranchi-835215
Jharkhand, INDIA

MoU
BETWEEN
JHARKHAND STATE POLLUTION CONTROL BOARD
AND
BIRLA INSTITUTE OF TECHNOLOGY MERSA
AND
RANCHI MUNICIPAL CORPORATION



Government of Jharkhand

Receipt of Online Payment of Stamp Duty

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Receipt Amount : 100/-

Amount In Words : One Hundred Rupees Only

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District Name : Ranchi

Stamp Duty Paid By : Ranchi Municipal Corporation

Purpose of stamp duty paid : Agreement

First Party Name : Ranchi Municipal Corporation

Second Party Name : Jharkhand State Pollution Control Board

GRN Number : 2105084488

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इस रसीद का उपयोग केवल एक ही दस्तावेज पर मुद्रांक शुल्क का भुगतान के प्रमाण हेतु ही किया जा सकता है। पुनः प्रिन्ट कर अथवा फोटो कॉपी आदि द्वारा इसी रसीद का दूसरे दस्तावेज पर मुद्रांक शुल्क का भुगतान के प्रमाण हेतु उपयोग भारतीय मुद्रांक अधिनियम, 1899 की धारा 62 अन्तर्गत दण्डनीय अपराध है।

Memorandum of Understanding

Among

Jharkhand State Pollution Control Board

And

Birla Institute of Technology, Mesra

And

Ranchi Municipal Corporation, Ranchi

This Memorandum of Understanding ("MoU") is entered into on 19.3.2021 (Effective Date) by and among

Jharkhand State Pollution Control Board (JSPCB) having its office at *H.E.C., Dhurwa, Ranchi-834004 (Jharkhand)*, India, hereinafter referred to as *Jharkhand State Pollution Control Board (JSPCB)*, of the FIRST PARTY,

And

Birla Institute of Technology (BIT) having its office at *Mesra-835215, Ranchi, Jharkhand, India*, hereinafter referred to as 'Institute of Repute (IoR)', of the SECOND PARTY,

And

Ranchi Municipal Corporation, the governing body of the city of Ranchi, having its offices at *near Kutcheri, Deputy Para, Ahirtoli, Ranchi, Jharkhand 834001, India*, hereinafter referred to as 'Urban Local Body (ULB)', of the THIRD PARTY.

The aforesaid institutions are hereinafter referred to individually as the Party and collectively as the Parties.

Introduction

The Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India has launched the National Clean Air Programme (NCAP) for pan India to tackle



the air pollution problem across the country. NCAP is envisaged as a collaborative, cross sectoral and multi-stakeholder programme to tackle all sources of air pollution.

For the City of *Ranchi*, the National Knowledge Network of NCAP in consultation with RMC has chosen *BIT* as the IoR to function as a technical partner and provide technical assistance to the RMC and JSPCB.

The collaboration will be established within the principles set out in the following sections:

1. Objective

Under the NCAP, city specific interventions and action plans will be formulated for implementation by the JSPCB and RMC, along with *BIT* as a technical partner for the City of *Ranchi*. The National Knowledge Network (NKN), Central Pollution Control Board (CPCB) and MoEF&CC will be overseeing the coordination and technical compliance.

Information about the NKN and scientific work carried out by NKN & IoR shall be available at: <https://www.nkn.urbansciences.in/>

Further information about the NCAP is available at http://moef.gov.in/wp-content/uploads/2019/05/NCAP_Report.pdf.

2. Functions of the Parties

Role of IoR: IoR will act as a technical partner for the City of Ranchi for the implementation of NCAP. IoR will extend all necessary knowledge based support to the JSPCB and RMC, in agreement with the guidance provided by CPCB and NKN. IoR may undertake Air quality monitoring and modeling work, data analysis, data utilization, compilation, adherence to interpretation protocols, report preparation, etc. IoR shall also help in calibration of CAAQMS, compliance verification work of emission norms as a third party to provide independent input to JSPCB/and policy makers. IoR shall be engaged by MoEF&CC for performance assessment (Third Party Audit (TPA)) based on predefined framework for cities other than with which they are knowledge partners. Research conducted by IoR shall also focus on efficacy and efficiency of various individual measures by various tools and techniques including cost-benefit analysis with support from NKN.

Role of JSPCB: JSPCB will function as the regulatory body, overseeing the compliance of regulations and intervention policies in the city. JSPCB will commit to their city specific action plans and inform IoR of their activities under NCAP, and consult IoR for technical expertise. JSPCB will engage IoR in Capacity building with the help of NKN and ensure knowledge uniformity in planning and implementation of NCAP in all Non-



Attainment cities in the State. JSPCB as well as RMC will also ensure the use of best practices.

Role of RMC: The RMC shall commit to all air quality targets mentioned for the city under NCAP. City specific interventions and action plans will be formulated by the RMC with advice from IoR. RMC shall update IoR on all progress made so far and consult them on all future activities undertaken as a part of NCAP.

3. Conflict of Interest

Since, the current pool of expertise in air quality domain is limited; it is desirable to include institutions/scientist/faculty members with a proven record in this domain as IoRs, even if they are a part of the NKN. A faculty/scientist affiliated to an IoR will not be involved in the decision making for the activities carried out by the IoR. That is, whenever an NKN Nodal Faculty is approached to provide their consulting services as a nodal faculty/Principal Investigator (P.I.) of their affiliated IoR, they will recuse themselves from the agenda and the proposal will be reviewed by Nodal Faculty experts of any other NKN institute, and not by themselves.

4. Method of Cooperation/Coordination

Whereas the parties to this MoU agree to co-operate in specific assignment(s); they shall share relevant information and experience in their possession with a view to achieve the mutually beneficial and technical association and to satisfy the need of the accomplishment of objective of MoU; except information which may be subject of copyright or technology agreements, royalties in licenses in which case the parties may procure the use of such information on commercial terms. Besides this, all the parties would also share the journals, publications, papers etc., published or any data, monitoring report etc. so that, capacity building of all parties/organization takes place to accomplish the objective. All parties shall appoint one member each to coordinate the activities on its behalf.

JSPCB: Raghvendra Narayan Kashyap, Regional Officer, Ranchi

BIT: (i) Dr. Nishi Srivastava, Asst Prof., BIT Mesra
(ii) Dr. T. Bhattacharya, Asst Prof., BIT Mesra

Ranchi Municipal Corporation: _____

5. Effective date and duration of the MoU

The MoU shall be effective from the date of signing by all the Parties which shall be the Zero Date and shall remain in force till the extent of NCAP. The Parties may extend the term in writing on year-to-year basis subject to the continuation of NCAP scheme.

6. Deliverables

Information about the NKN and scientific work carried out by NKN and IoRs shall be available at: <https://www.nkn.urbansciences.in/>. Progress of city wise work carried out by IoR in collaboration with JSPCB/ RMC shall be updated quarterly in www.nkn.urbansciences.in.

7. Confidentiality

All parties reciprocally guarantee that all technical information and data generated under this MoU shall be treated as confidential and shall not be divulged by any party without prior written consent of the other even after the expiry of this MoU

8. Funding

The expenditure incurred for implementation of the MoU for IoR, RMC and JSPCB would be met out of NCAP/ Fifteenth Finance Commission funds /any other central or state scheme under implementation for improvement of Air quality available with RMC and JSPCB

9. In case, there be a dispute relating to any aspect of academic cooperation, all the Parties will resolve the dispute in a spirit of mutual respect, and shared responsibility, failing which, the unresolved difference or disputes shall be referred to the arbitration by a distinguished authority agreed mutually by all the parties and decision by that authority shall be final and binding.

10. Force Majeure

Neither party shall be held responsible for non-fulfillment of their respective obligations under this agreement due to exigency of one or more of the force majeure events such as but not limited to act of God, War, Flood, Earthquakes, Strikes, Lockouts, Epidemics, Riots, Civil Commotion, etc., provided on the occurrence and cessation of any such events, the party effected thereby shall give a notice in writing to the other party within one month of such occurrence or cessation. If the force majeure conditions continue beyond six months, the parties shall jointly decide about the future course of action.







11. Modifications and Amendments:

Modifications and Amendments to this MoU, if any, shall be made in writing by mutual consent of all the parties."



.....
For and on behalf of
Regional Officer
J.S.P.C. Board
Dhurwa, Ranchi-4

Signature:
Name: **R.N. Kashyap**

Designation: **Regional Officer,**
TSPCB
Date: **19/03/2021**
Witness:



.....
For and on behalf of
BIT, Mesra

Signature:
Name: **Colonel (Retd.) Sukhpal**
Singh Khetarpal
Designation: **Registrar**
Date: **19/03/2021**
Witness:

REGISTRAR
Birla Institute of Technology
Mesra, Ranchi-835215



.....
For and on behalf of
RMC

Signature:
Name: **Rajesh Kumar**
Designation: **Addl. Municipal Commissioner**
Date: **19.3.2021**
Witness:

Department/Section: Physics

NAAC Metric

3.7.1 Number of collaborative activities with other institutions/ research establishments/industry for research and academic development of faculty and students per year (10)

3.7.1.1: Total number of Collaborative activities with other institutions/ research establishment/industry for research and academic development of faculty and students year wise during the last five years

Sl. No.	Title of the collaborative activity	Name of the collaborating agency with contact details	Name of the participant	Year of collaboration	Duration	Nature of the activity	Page No
1	Joint Research work	Laboratoire Image Ville Environment, UMR 7362 CNRS/UDS France	Dr Nishi Shrivastava and Nadege Blond	2020	2020-2021	Joint research	1
2	Joint Research work	IOP Bhubaneswar and IIT Jodhpur	Dr Saurabh Lahiri, Subhasish Banerjee and A. M. Jayannavar	2021	2020-2021	Joint research	2
3	Joint Research work	IIT Jodhpur	Dr Madhu Priya and Prabhat K Jaiswal	2020	2020-2021	Joint research	3 & 4
4	Joint Research work	CGCRI Kolkata	Dr. Dilip K. Singh and Dr. Prabir pal	2020	2020-2021	Joint research	5
5	Joint Research work	Department of Computer Science and Engineering, Pohang University of Science and Technology, Pohang, South Korea.	Dr. Pawan K. Tiwari and Dr. Suman Pandey	2020	2020-2021	Joint research	6
6	Joint Research work	Department of Physics, University of Petroleum and Energy Studies, Dehradun, India	Dr. Pawan K. Tiwari and Dr. K. P. S Parmar	2020	2020-2021	Joint research	6

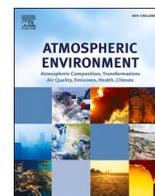
L

7	Joint Research work	Department of Electrical Engineering, Majlesi Branch, Islamic Azad University, Isfahan 8631656451, Iran	Dr. Pawan K. Tiwari and Mohsen Ashourian	2021	2020-2021	Joint research	7
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S. K. Sinha

Signature of Head
(Prof. S. K. Sinha)
Department of Physics
BIT Mesra

Head
Department of Physics
Birla Institute of Technology
Mesra, Ranchi-835215
Jharkhand, INDIA



Impact of meteorological parameterization schemes on CTM model simulations

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^a Department of Physics, Birla Institute of Technology, Mesra, Ranchi, 835215, India

^b Laboratoire Image Ville Environnement, UMR 7362, CNRS/UDS, 3, rue de l'Argonne, 67000, Strasbourg, France

HIGHLIGHTS

- We quantified the significance of cloud/microphysical meteorological parameterization schemes in the simulation of aerosols by a CTM.
- This type of analysis study is sparse over the Indian sub-continent though essential to the realistic simulation of aerosols over this region.
- It is essential to evaluate the effect of cloud, and microphysics on the aerosol simulation as aerosol concentration and cloud are interlinked.
- Results indicate that a single parameterization scheme set may not produce good results for all the parameters/pollutants.
- These results also infer that ensemble modeling could also lead to a better option than using single simulations.

ARTICLE INFO

Keywords:

Microphysics parameterization schemes
Cumulus parameterization scheme
Aerosols
Chemical transport model
WRF
Sensitivity study

ABSTRACT

Meteorology plays a key role in regional aerosol concentration and distribution. Microphysics and cloud formation processes in the atmosphere is interlinked with aerosol and their removal processes. To characterize their role in modulating the aerosols/pollutants concentration simulation by a chemical transport model (CTM, here we have taken CHIMERE model); we have performed this study with different microphysical (MP) schemes (Kessler Scheme/Lin Scheme/WRF single Moment 3-class (WSM3) scheme) and cumulus cloud parameterization (CU) schemes (Kain-Fritsch Scheme/Betts-Miller-Janjic Scheme/Grell 3D) of Weather Research and Forecasting Model (WRF). We have used the WRF model over a domain (3°S-41.8°N; 59.5°-102.5°E) with the resolution of (0.25° × 0.25°) while CHIMERE model simulations are performed over the domain (6°-37.5°N; 67°-95.5°E) with the similar resolution for a selected period of monsoon. In total nine combinations are framed with MP and CU schemes to observe the sensitivity of CTM to these schemes. Simulated results are compared with the satellite (TRMM/MODIS) and reanalysis data (MERRA-2) to appraise the model's performance with various parameterization scheme combinations. Results indicate that despite the same initial and boundary conditions and model configuration, notable differences occurred in the simulated meteorological parameters with different scheme combinations. Results suggested that CTM performed in a reliable range with cumulus scheme Betts-Miller-Janjic Scheme (BMJ) and Grell 3D scheme with microphysical parameterization scheme Purdue Lin Scheme over Indian continent. The study also suggests that a single set may not produce good results for all the parameters/pollutants; thus, we have to choose the parameterization schemes which give optimal results for all the parameters/pollutants. These results also infer that ensemble modeling could also lead to a better option than using single simulations.

1. Introduction

Aerosols are an integral part of the climate system as they have a huge impact on the human health, ecosystem, climate, and radiation budget of the earth. Thus, the exact representation of aerosol is essential

for climatic and health-related studies. Though several research works are performed to quantify the impact of aerosols on the climate system, complex interaction with other components of the earth climate system poses restrictions on the understanding of their distribution (Babu and Moorthy, 2002; Bond et al., 2004; Chin et al., 2009; De Meij et al., 2009;

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Exploring the extent of validity of quantum work fluctuation theorems in the presence of weak measurements

Sourabh Lahiri¹ · Subhashish Banerjee² · A. M. Jayannavar³

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Abstract

Work fluctuation theorems have been one of the important achievements in the field of nonequilibrium Statistical Physics, both in the classical and quantum regimes. Conventionally, the work done on a quantum system is defined by means of a two-point measurement scheme, where a projective measurement of the Hamiltonian is performed both at the beginning and at the end of the process. Recently, quantum work fluctuation theorems in the context of generalized measurements have received a lot of attention. Here, we define a weak value of work, within the broad framework of generalized measurements and show that the deviation from the exact work fluctuation theorems are much less in this formalism as compared to previous efforts in the literature, using a two-level system as the model. We find that the original form of Jarzynski equality (valid for projective two-point measurements) does not remain exact in this framework. Nevertheless, the deviations are in general small, so that an approximate effective temperature of the thermal bath can be deduced using our results. Further, in the limit of the measurements being projective, the exact form of the work fluctuation theorems is recovered.

Keywords Stochastic Thermodynamics · Fluctuation Theorems · Weak measurements · Quantum Thermodynamics

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Enhanced attraction between particles in a bidisperse mixture with random pair-wise interactions

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ABSTRACT

We study a complex mixture with bidispersity in size and polydispersity in energy using computer simulation. The energy polydispersity between the bidisperse particles is introduced by considering random pair-wise interactions. Extensive molecular dynamics simulations are performed to compute potential energy and neighborhood identity ordering (NIO) parameter as a function of temperature for different size-ratios and concentrations of the two species by quenching it from a high-temperature fluid state to a solid state. Our findings demonstrate an enhancement of the neighborhood identity ordering on the addition of particles of different sizes, which also depends on particle concentration. Moreover, a comparatively higher increase in the NIO parameter is achieved by tuning the size-ratio of the particles. We also propose that the NIO parameter is a good marker to differentiate multicomponent systems (below the liquid to solid transition temperature) with different size-ratios and concentrations.

ARTICLE HISTORY

Received 18 February 2020
Accepted 12 August 2020

KEYWORDS

Polydispersity; molecular dynamics simulation; liquid-solid transition; colloids; multicomponent alloys

1. Introduction

Understanding the relationship between the microscopic structure of a material and its response to external perturbations, e.g. temperature, pressure, etc., is of great technological and industrial significance. These perturbations may result in the phase transformations of the material from an unstable state to its preferred thermodynamic equilibrium state [1–3]. The subsequent dynamics of materials with few components, for instance, binary mixtures, has been a subject of intense study in the literature [3–5]. However, it is also of considerable interest to study polydisperse systems exhibiting a spread in a variable characterizing the constituent particles. In particular, designing materials with desired properties and strength have led scientists to consider systems with many components, which may vary across some distribution in interactions, shapes, sizes, and charges [6–8]. Polydispersity is present in systems as diverse as high-entropy alloys [9–13] and complex fluids [7, 14–16], such as polymer blends, liquid crystals, colloidal suspensions, and find industrial applications in bitumen, paint, automotive fuels, etc. [14].

For developing new materials, the traditional alloying strategy is to select one dominant component and add other elements in small amounts to improve specific properties. Such techniques put a restriction on further improvement of mechanical properties, and while achieving high strength (\sim GPa), usually, failure of materials occurs. To explore an even more comprehensive range of remarkable new materials, strategies like the equiatomic substitution of the main element with multi-element systems have been very successful and reviewed in Ref. [12]. The introduction of polydispersity in such high-entropy alloys [9,10,17,18] gives rise to a variety of amorphous and

Host–parasite coevolution: Role of selection, mutation, and asexual reproduction on evolvability

Cite as: Chaos 30, 073103 (2020); doi: 10.1063/5.0010057

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Published Online: 2 July 2020



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Export Citation



CrossMark

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ABSTRACT

The key to the survival of a species lies in understanding its evolution in an ever-changing environment. We report a theoretical model that integrates frequency-dependent selection, mutation, and asexual reproduction for understanding the biological evolution of a host species in the presence of parasites. We study the host–parasite coevolution in a one-dimensional genotypic space by considering a dynamic and heterogeneous environment modeled using a fitness landscape. It is observed that the presence of parasites facilitates a faster evolution of the host population toward its fitness maximum. We also find that the time required to reach the maximum fitness (optimization time) decreases with increased infection from the parasites. However, the overall fitness of the host population declines due to the parasitic infection. In the limit where parasites are considered to evolve much faster than the hosts, the optimization time reduces even further. Our findings indicate that parasites can play a crucial role in the survival of its host in a rapidly changing environment.

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Understanding the mechanism that drives the biological evolution of a species plays a significant role in its survival under an extreme and fast-changing environment. In this manuscript, we consider the ecological interaction between the host and the parasite populations that often influence each other's evolution. We thus formulate a mathematical model that describes the key features of host–parasite coevolution in terms of the coupled partial differential equations. The role of selection, mutation, and asexual reproduction is studied on the dynamics of a host population, which evolves in the presence of parasites. A swift response to a rapidly changing environment is crucial for the survival of any species. The idealized mathematical model formulated in the paper indicates that the evolution of host species in the presence of parasites can speed up its evolution toward a global fitness peak, though at lower fitness values.

I. INTRODUCTION

Biological evolution of organisms is a complex phenomenon that usually proceeds toward increasing complexity over successive generations. Understanding the underlying processes responsible for promoting the complexity has been an active area of research since the last century.^{1–6} A theory on this evolutionary dynamics was first proposed by Darwin and Wallace^{7,8} and has been applied successfully in understanding a variety of biological phenomena. Darwinian dynamics formulates the theory, though qualitatively only, for the evolution of populations with time and is primarily based on selection, mutation, and reproduction.⁹ However, using mathematical models and statistical techniques, more quantitative descriptions of the resulting evolution have been proposed.^{10–20}

Smith described natural selection in evolutionary game theory, where the reproduction rate (or fitness) of an individual with a fixed strategy is considered dependent on the frequency of

Raman data of obtained from your gC3N4 samples

1 message

Prabir Pal <prabir.phy@gmail.com>

Fri, Jul 16, 2021 at 11:09 AM

To: "Dr. Dilip Kumar Singh" <dilipsinghnano1@gmail.com>

Dear Dilip,

Here I have enclosed Raman data of your 3 gC3N4 samples taken with NIR excitation 633 nm. Other excitation doesn't work due strong luminescence peak appearing in the scan region.

With Regards

Prabir

--

Dr. Prabir Pal
Principal Scientist

CSIR-Central Glass & Ceramic Research Institute

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office:+91-33-2322-3334

mobile:+91-9625082087

<https://sites.google.com/site/prabirphy/><http://orcid.org/0000-0002-7356-2587>

3 attachments **g2H_Raman_633nm_600gr_D1_30sec_15_10584.txt**
20K **g2H_Raman_633nm_600gr_D1_30sec_15_10585.txt**
16K **g4H_Raman_633nm_600gr_D2_30sec_15_10586.txt**
16K

Optical Signal Transmission through Masked Aperture to Extend the Depth of Focus in Optical Coherence Tomography

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3- Department of Computer Science and Engineering, Pohang University of Science and Technology, Pohang, South Korea.

Email: suman17july@gmail.com (Corresponding author)

Received: May 2020

Revised: August 2020

Accepted: September 2020

ABSTRACT:

Optical Coherence Tomography (OCT) imaging technique has emerged as a non- or minimally invasive modality in the clinical pathogenesis such as deep tissue examining and optical biopsy etc. The OCT imaging increases the Depth of Focus (DoF) by devising mechanisms to increase an Optical Transfer Function (OTF) of the imaging system. This is achieved through an apodization technique on the surface of lens in conjugation with the femtosecond Bessel-type laser beam. An investigation on postulation of OTF through a masked aperture, or specifically a micro-dot is investigated to measure variations of intensity profile at the optical coordinates in the radial as well as axial directions. The intensity variations in the radial and axial coordinates are calibrated to obtain the information, which significantly helps in devising of OCT imaging system. A theoretical investigation of OTF matching the experimental relationship between spot size and DoF in response to obscuration ratio is presented in this paper. This mathematical approach could be applied to different types of masking functions by meticulously exploring the parameters of optical coordinates.

KEYWORDS: Optical Transfer Function, Geometrical Coordinate, Optical Coordinate, Spot Size, Depth of Focus, Obscuration, Pupil Function.

1. INTRODUCTION

The advancement in an Optical Coherence Tomography (OCT) imaging technique has revolutionized the cell biopsy in accurate diagnosis of the disease and its treatment during pre- and post-surgical procedures [1]. It is preferred over the common stained histological examination due to one of the robust reasons that an OCT imaging is a real-time non- or minimally invasive diagnostic technique involving minimal sampling errors [2]. Moreover, due to its high resolution, such OCT has numerous applications in the area of retinal imaging in ophthalmology [3-4], brain tissue imaging [5], and deep tissue imaging [6-7], etc. The high resolution of OCT is achieved via increasing the depth of focus (DoF) of an optical beam and via minimizing an attenuation of backscattered light from the tissues by selecting the wavelength of the order of ca. ~1300 nm [7]-[8]. The common endoscopic type of OCT imaging system such as Stratus OCT is composed of swept laser source (probe beam), single-mode optical fiber, Gradient Index (GRIN) lens, and small prism to deflect focused light onto a tissue [4],[6].

The imaging system relies on studying an optical probe beam of two important factors such as its spot size and the depth of focus (DoF) [9]-[10]. The spot size of the focusing lens is given by $\lambda/(2NA)$, where λ is the wavelength and NA is the numerical aperture of that optical system. Another definitions uses the Full Width at Half Maximum (FWHM) and $(1/e^2)$ times the maximum of transmitted intensity at the focal plane of the optical system. The estimation of DoF is approximately proportional to the product of the wavelength λ and the square of the f-number (the ratio between the focal length f , and the diameter D , of the imaging lens), i.e., $\lambda(f/D)^2$. In terms of intensity, the DoF is the distance between the focal point and the point where the intensity decreases to 90%, while in application like imaging systems, it is 50% [11].

The deep tissue imaging could be achieved by increasing the DoF by using numerous types of the aperture of the imaging lens such as axicon [12], diffractive axicon [13], annular aperture [14], binary phase array of annuli [15], and cubic phase mask [16],

Review Article

Pivotal Role of Quantum Dots in the Advancement of Healthcare Research

Pawan K. Tiwari,¹ Mugdha Sahu,¹ Gagan Kumar,¹ and Mohsen Ashourian ²

¹Department of Physics, Birla Institute of Technology, Mesra, Ranchi 835215, Jharkhand, India

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The quantum dot is a kind of nanoparticle whose dimension is smaller than the size of a typical nanoparticle ranging from tens of nanometers to a few hundredths of nanometers. The quantum mechanical behavior associated with the quantum dot displays different optical and electronic properties, enabling the quantum dot to find potential applications in a multitude of areas such as solar cells, light-emitting diodes, lasers, and biomedical applications. The objective of this investigation is to explore its fundamentals, synthesis, and applications, especially in the healthcare domain. We have discussed the quantum dot synthesis techniques using chemical methods, namely, wet-chemical methods and vapor-phase methods and plasma processing methods, namely, an ion sputtering method and plasma-enhanced chemical vapor deposition method. We have thoroughly investigated the application of quantum dots in imaging, diagnostics, and gene therapy areas. A significant outcome of this review is to propose quantum dots as a new modality in the treatment of cancer and gene therapeutics in the healthcare domain and the potentials of artificial intelligence to improve their performance via the applications of neural networks.

1. Introduction

From solar panels to medical applications, quantum dots are receiving discernible attention in today's world due to their unparalleled and cutting-edge scope [1, 2]. Quantum dots are colloidal semiconductor nanoparticles that exhibit a distinctive set of optical and transport properties due to their spatial confinement regime, also known as the quantum confinement effect. In bulk semiconductors, the presence of multiple atoms causes splitting of electronic energy levels which when grouped forms an energy band. The most filled band, known as the valence band, is at lower energy, and the mostly empty band known as the conduction band is at relatively higher energy. The valence band and conduction band are forbidden by an energy gap, called a bandgap. In order to excite a valence electron to the conduction band, the applied radiation of energy radiation must be equivalent to the forbidden energy of the bandgap. After absorption of suitable energy, an electron (e^-) can jump into conduction

from the valence band which causes the formation of vacant space in the valence band, known as a hole (h^+). This pair of electrons (e^-) and hole (h^+) can be perceived as a hydrogen-like species and is known as an exciton. These excitons for a specific semiconductor bear a separation between the electron (e^-) and hole (h^+) which is called the exciton Bohr radius. In quantum dots, the excitons are confined to a much smaller volume of the semiconductor material which is in order of its exciton Bohr radius. This results in less splitting of the energy bands and leads to a quantum confinement region [3]. Such a region of electron-hole pairs in various dimensions within a material and the electronic energy bands associated with it are discrete and quantized. The size and the composition of the quantum dots can be altered to allow the energy levels and the bandgap to be fine-tuned to specific desired energies. Quantum dots are bandgap tunable by their dimension (diameter ranging typically from 2 to 10 nm) which means that their optical and electrical properties can be engineered to meet specific biomedical applications [4].

Department/Section: Physics

NAAC Metric 3.1.4 Number of JRFs, SRFs, Post Doctoral Fellows, Research Associates and other research fellows enrolled in the institution during 2020-2021 (4)
3.1.4 Number of JRFs, SRFs, Post Doctoral Fellows, Research Associates and other research fellows enrolled in the institution during 2020-2021 (4)

Sl.No	Name of Research fellow	Year of enrolment	Duration of fellowship	Type of the fellowship	Granting agency	Qualifying exam if any (NET, GATE, etc.)	
1	Aashishmehta	2021	1 YR	INSTITUTE	IRF POST	NIL	1
2	ApurbaTewari	2021	1 YR	INSTITUTE	IRF POST	NIL	1
3	VIGNESH D PHD/AP/1005/20	2021	1 YR	PROJECT	DST- INSPIRE	NIL	1
4	SHUVALAXMI DAS PHD/AP/10006/20	2021	1 YR	INSTITUTE	IRF POST	NIL	1
5	MunchunKumari	2021	1 YR	INSTITUTE	IRF POST	NIL	3



Signature of Head
(Prof. S. K. Sinha)
Department of Physics
BIT Mesra

Head
Department of Physics
Birla Institute of Technology
Mesra, Ranchi-835215
Jharkhand, INDIA

**BIRLA INSTITUTE OF TECHNOLOGY
MESRA : RANCHI**

Ref No. GO/Estb/Ph.D/IRF/2020-21/2484A

Date: 12th January 2021

MEMO

1. As per list of Dean (AAC) dated 07th January 2021 for Institute Research Fellowship, the following students of Ph.D Programme (Session: MO 2020) have been awarded the Institute Research Fellowship (IRF) as per details given below:

DEPARTMENT – CHEMISTRY

SI No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/AC/10001/20	SADHANA KUNDU	FT-IRF	Rs.25,000/- per month
2.	PHD/AC/10007/20	AYUSH ARYAN	FT-IRF	Rs.25,000/- per month
3.	PHD/AC/10010/20	BIPIN KUMAR SINGH	FT-IRF	Rs.25,000/- per month

DEPARTMENT – MATHEMATICS

SI No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/AM/10002/20	YASHAVANT KUMAR	FT-IRF	Rs.25,000/- per month

DEPARTMENT – PHYSICS

SI No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/AP/10002/20	ASHISH MEHTA	FT-IRF	Rs.25,000/- per month
2.	PHD/AP/10004/20	APURBA TEWARI	FT-IRF	Rs.25,000/- per month
3.	PHD/AP/10005/20	VIGNESH D	FT-IRF	Rs.25,000/- per month
4.	PHD/AP/10006/20	SHUVALAXMI DAS	FT-IRF	Rs.25,000/- per month

DEPARTMENT – ARCHITECTURE

SI No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/AR/10002/20	MITALI MADHUSMITA	FT-IRF	Rs.25,000/- per month
2.	PHD/AR/10004/20	SAMAN AMBREEN	FT-IRF	Rs.25,000/- per month

DEPARTMENT – BIOENGINEERING

SI No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/BE/10004/20	MAHADEVAN IYER	FT-IRF	Rs.25,000/- per month

DEPARTMENT – CIVIL & ENVIRONMENTAL ENGINEERING

SI No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/CEE/10001/20	UZMA AZIM	FT-IRF	Rs.25,000/- per month
2.	PHD/CEE/10003/20	PARITOSH KUMAR SINGH	FT-IRF	Rs.25,000/- per month
3.	PHD/CEE/10004/20	AMRAPALI TIWARI	FT-IRF	Rs.25,000/- per month
4.	PHD/CEE/10005/20	MALA KUMARI	FT-IRF	Rs.25,000/- per month

DEPARTMENT – CHEMICAL ENGINEERING

SI No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/CHE/10001/20	ANIRBAN MUKHERJEE	FT-IRF	Rs.25,000/- per month
2.	PHD/CHE/10002/20	GAURAV KUMAR	FT-IRF	Rs.25,000/- per month
3.	PHD/CHE/10003/20	MONICA JAISWAL	FT-IRF	Rs.25,000/- per month

BIRLA INSTITUTE OF TECHNOLOGY
MESRA RANCHI - 835215

Ref No. GO/Estb/Ph.D/IRF/2020-21/4707

Date: 04th March 2021

MEMO

1. As per list of Dean (AAC) dated 25th February 2021 for Institute Research Fellowship, the following students of Ph.D Programme (Session: SP 2021) have been awarded the Institute Research Fellowship (IRF) as per details given below:

DEPARTMENT – BIOENGINEERING

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/BE/10051/20	ANUSHKA AGRAWAL	FT-IRF	Rs.25,000/- per month
2.	PHD/BE/10053/20	ANURADHA	FT-IRF	Rs.25,000/- per month
3.	PHD/BE/10056/20	KANISHKA KUNAL	FT-IRF	Rs.25,000/- per month
4.	PHD/BE/10057/20	AAKANSHA SINGH	FT-IRF	Rs.25,000/- per month

DEPARTMENT – CHEMICAL ENGINEERING

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/CHE/10051/20	PALLAVI KUMARI	FT-IRF	Rs.25,000/- per month

DEPARTMENT – CHEMISTRY

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/AC/10051/20	ANINDITA MUKHERJEE	FT-IRF	Rs.25,000/- per month

DEPARTMENT – CIVIL & ENVIRONMENTAL ENGINEERING

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/CEE/10051/20	AAROHI KUMAR MUNSHI	FT-IRF	Rs.25,000/- per month
2.	PHD/CEE/10052/20	GARIMA CHATURVEDI	FT-IRF	Rs.25,000/- per month
3.	PHD/CEE/10053/20	DIPANSHU SNEHI	FT-IRF	Rs.25,000/- per month
4.	PHD/CEE/10054/20	MOHD ABU BAKR	FT-IRF	Rs.25,000/- per month

DEPARTMENT – COMPUTER SCIENCE & ENGINEERING

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/CS/10051/20	SRISHTI RAJ	FT-IRF	Rs.25,000/- per month
2.	PHD/CS/10053/20	BIKRAM KAR	FT-IRF	Rs.25,000/- per month

DEPARTMENT – ELECTRICAL AND ELECTRONICS ENGINEERING

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/EE/10051/20	PRIYA DUBEY	FT-IRF	Rs.25,000/- per month
2.	PHD/EE/10053/20	RAJDIP DEBNATH	FT-IRF	Rs.25,000/- per month
3.	PHD/EE/10054/20	PARUL PRIYA	FT-IRF	Rs.25,000/- per month
4.	PHD/EE/10055/20	PRIYARANJAN KUMAR	FT-IRF	Rs.25,000/- per month



DEPARTMENT – ELECTRONICS & COMMUNICATION ENGINEERING

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/EC/10008/20	RANI ANKITA*	FT-IRF	Rs.25,000/- per month
2.	PHD/10052/20	HIMADRI NIRJHAR MANDAL	FT-IRF	Rs.25,000/- per month
3.	PHD/EC/10053/20	DIVYA SHARMA	FT-IRF	Rs.25,000/- per month
4.	PHD/EC/10056/20	PREETI KUMARI	FT-IRF	Rs. 25,000/- per month

DEPARTMENT – MANAGEMENT

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/MB/10052/20	SHWETA KUMARI	FT-IRF	Rs.25,000/- per month
2.	PHD/MB/10054/20	ANKIT KUMAR	FT-IRF	Rs.25,000/- per month

DEPARTMENT – MECHANICAL ENGINEERING

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/ME/10051/20	RAJ KUMAR	FT-IRF	Rs.25,000/- per month
2.	PHD/ME/10052/20	ANSHUMAAN PRATAP BHAGAT	FT-IRF	Rs.25,000/- per month

DEPARTMENT – PHARMACEUTICAL SCIENCE & TECHNOLOGY

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/PH/10052/18	PARAG ROY*	FT-IRF	Rs.25,000/- per month
2.	PHD/PH/10052/20	GOURAV RAKSHIT	FT-IRF	Rs.25,000/- per month

DEPARTMENT – PHYSICS

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
✓ 1.	PHD/AP/10051/20	MUNCHUN KUMARI	FT-IRF	Rs.25,000/- per month

DEPARTMENT – PRODUCTION ENGINEERING

Sl No.	Roll No.	Candidate Name	FT/PT	Amount (IRF)
1.	PHD/PE/10051/20	ANSHU ANAND	FT-IRF	Rs.25,000/- per month
2.	PHD/PE/10053/20	PRAKASH KUMAR	FT-IRF	Rs.25,000/- per month
3.	PHD/PE/10054/20	KUMAR KANISHKA	FT-IRF	Rs.25,000/- per month

They will be entitled for 15 days leave for every six months; no other leave will be admissible.

They will undertake to perform full time research at this institute and to carryout required Academic Duties (upto 12 hrs per week) as assigned by the respective HODs / Director / In-charges.

They will not be entitled for any other salary / fellowship / stipend from any other source.

Fellowship will be released after receipt of absentee report from respective Department.

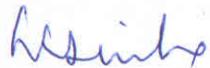
Department/Section: Physics

NAAC Metric

1.3.4 Percentage of students undertaking field projects / research projects / internships (Data for the latest completed academic year(2020-21)(5)

1.3.4.1: Number of students undertaking field project or research projects or internships

Program Code	Programme name	Name of the students	Link to the relevant document
None			



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Jharkhand, INDIA

Department/Section: Physics

NAAC Metric 2.4.2 Average percentage of full time teachers with Ph.D./D.M/M.Ch./D.N.B Superspeciality/D.Sc./D'Lit. during the 2020-21 (15)

Name of full time teacher with Ph.D./D.M/M.Ch./D.N.B Superspeciality/D.Sc./D'Lit.	Qualification (Ph.D./D.M/M.Ch./D.N.B Super speciality/D.Sc./D'Lit.)	Year of obtaining the qualification
Dr.Pawan Kumar Tiwari	Ph.D	2005



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Department/Section: Physics

NAAC Metric 2.4.4 Average percentage of full time teachers who received awards, recognition, fellowships at State, National, International level from Government/Govt. recognised bodies during 2020-21 & **3.4.2** The institution provides incentives to teachers who receive state, national and international recognitions/awards
 1. Commendation and monetary incentive at a University function

2.4.4 Average percentage of full time teachers who received awards, recognition, fellowships at State, National, International level from Government/Govt. recognised bodies during the 2020-2021 & **3.4.2** The institution provides incentives to teachers who receive state, national and international recognitions/awards
 1. Commendation and monetary incentive at a University function
 2. Commendation and medal at a University function
 3. Certificate of honor
 4. Announcement in the Newsletter / website (5)

Name of full time teachers receiving awards from state level, national level, international level	Year of Award	P A N	Designation	Name of the award, fellowship, received from Government or Government recognised bodies	Name of the Awarding Agency	Incentives/Type of the incentive given by the HEI in recognition of the award	Link to the relevant documents	Page No.
Dr. Dilip Kumar Singh	2021		Assistant Professor	Invited talk-Advanced skills in Research and Protection in IPR				1
Prof. S. K. Rout	2021		Professor	Resource person -Refresher course-Recent Advances in Physics				2
Dr. Sanat Kumar	2020		Assistant Professor	Invited talk-National Webinar Modern Trends in Physics				3

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Mukherjee							
Prof. SunitaKeshri	2020	Professor	Invited talk-Modern Approach on Magnetism and Material science in Engineering				4
Prof. S. K. Rout	2020	Professor	Invited talk- Advanced Materials for Energy storage and Fuel Cell Applications				5
Prof. S. K. Rout	2021	Professor	Invited talk-Online Refresher Course in Physics, Sambalpur university				6
Prof. S. K. Rout	2021	Professor	Invited talk-Online Refresher Course in Physics, Pt. Ravishankar Shukla University, Raipur				7
Dr. Nishi Shrivastava	2020	Assistant Professor	Invited talk-Dept of Physics, Dr. RamManoharLohiaavadh University, Ayodhya				8
Dr. Dilip Kumar Singh	2021	Assistant Professor	Invited talk - Five-Day workshop on Advanced skills in research and protetion of IPR, Amity University, Noida				9-14
Prof. S. K. Rout	2020	Professor	Invited talk-Recent trends on energy and related Materials				15
Dr. Dilip Kumar Singh	2021	Assistant Professor	Reviewer- Optics Letters				16
Dr. Nishi Shrivastava	2020	Assistant Professor	Reviewer-Journal of Water and climate change				17-22
Dr. Saurabh Lahiri	2021	Assistant Professor	Reviewer-Physical Review Research				23
Dr. Saurabh Lahiri	2021	Assistant Professor	Reviewer-Journal of Physics A: Mathematical and Theoretical				24
Prof. SunitaKeshri	2021	Professor	Reviewer- AIP Advances				25
Dr. Sanat Mukherjee	2021	Assistant Professor	Reviewer- Inspire Manak awards				26
Prof. S. Konar	2021	Professor	Reviewer-Optik				27-28
Prof. S. Konar	2021	Professor	Reviewer-Communications in Nonlinear Science and Numerical Simulation				29-30
Prof. S. Konar	2021	Professor	Reviewer-PhysicaScripta				31-32

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Prof. S. Konar	2021		Professor	Reviewer-Chinese journal of Physics				33-34
Prof. S. Konar	2021		Professor	Reviewer-Journal of Optics				35
Dr. Dilip Kumar Singh	2021		Assistant Professor	Reviewer-Nanotechnology				36
Prof. Sunita Keshri	2020		Professor	Thesis Reviewer-Guru Nanak Dev University, Amritsar				37-45
Dr. Nishi Shrivastava	2021		Assistant Professor	Committee Member-The 2021 International seminar on Environmental Engineering and Geoscience (ISEEG 2021)				46
Dr. Sanat Mukherjee			Assistant Professor	Reviewer-Applied surface sciences advances				47



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NAAC Metric 3.1.3 Percentage of teachers receiving national/ international fellowship/financial support by various agencies for advanced studies/ research during 2020-21 (3)

3.1.3 Percentage of teachers receiving national/ international fellowship/financial support by various agencies for advanced studies/ research during 2020-2021 (3)					
Sl.No.	Name of the teacher awarded national/ international fellowship/financial support	Name of the award/fellowship	Year of the Award	Awarding Agency	Link to certificates
None					



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NAAC Metric 3.3.2 Number of workshops/seminars conducted on Research methodology, Intellectual Property Rights (IPR), entrepreneurship, skill development during 2020-21 (10)

3.3.2 Number of workshops/seminars conducted on Research methodology, Intellectual Property Rights (IPR), entrepreneurship, skill development during the last five years (10)

3.3.2.1: Total number of workshops/seminars conducted on Research methodology, Intellectual Property Rights (IPR), entrepreneurship, skill development year wise during the last five years

Year	Name of the workshop/ seminar	Number of Participants	Date From – To	Link to the Activity report on the website
None				


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NAAC Metric 3.3.3 Number of awards / recognitions received for research/innovations by the institution/teachers/research scholars/students during the last five years (10)

3.3.3 Number of awards / recognitions received for research/innovations by the institution/teachers/research scholars/students during the last five years (10)

3.3.3.1: Total number of awards / recognitions received for research/ innovations won by institution/teachers/research scholars/students year wise during the last five years

Year of Award	Title of the innovation	Name of the Awardee	Name of the Awarding Agency with contact details	Category- institution/teacher/research scholar/student	Page No.
2021	AWSAR AWARD	SHOMAILA KHANAM	DST GOVT OF INDIA	Research scholar	1
2021	Inpire PhD Fellowship	Vignesh D	DST Govt of India	Research Scholar	2



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NAAC Metric 3.4.5 Number of research papers per teacher in the Journals notified on UGC website during 2020-21(15)

NAAC Metric 3.4.5 Number of research papers per teacher in the Journals notified on UGC website during 2020-2021

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	IS SN number	Link to the recognition in UGC enlistment of the Journal			Page No.
						Link to website of the Journal	Link to article/paper/abstract of the article	Is it listed in UGC Care list/Scopus/Web of Science/other, mention	
Low cost electrical probe station using etched tungsten nanoprobe: role of cathode geometry	Rakesh K Prasad and Dilip K Singh	Physics	Nano Express	2020	26-32-959X	https://iopscience.iop.org			1
Comparative spectroscopic analysis, performance and emissions evaluation of Madhucalongifolia and Jatropha curcas produced biodiesel	Rajeshwari Chatterjee, Sanat Kumar Mukherjee, Biswajit Paul & Somnath Chattopadhyaya	Physics	Environmental Science and Pollution Research	2021	09441344, 161474	https://iopscience.iop.org/article/10.1088/2632-0944/13441344		Scopus	2

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Structural, magnetic and transport properties of Ca and Sr doped Lanthanum manganites	Sunita KESHRI , Shailendra RAJPUT , Sonali BISWAS , Leena JOSHI , Wojciech SUSKI, and Piotr WIŚNIEWSKI	Physics	Journal of Metals, Materials and Minerals	2021	85 76 14 9	https://www.springer.com/journal/11356/	https://link.springer.com/article/10.1007/s11356-021-15081-0		3
Large magnetocaloric effect near room temperature in La _{0.67} Sr _{0.33} MnO ₃ manganite nanomaterials	Sonali Biswas and SunitaKeshri	Physics	J Mater Sci: Mater Electron	2020	09 57- 45 22	http://jmmm.material.chula.ac.th/	DOI: 10.14456/jmmm.2021.xx		4
Exploring the extent of validity of quantum work fluctuation theorems in the presence of weak measurements	SourabhLahiri, Subhashish Banerjee, A. M. Jayannavar	Physics	Quantum Information Processing	2021	15 70 07 55	https://www.springer.com/journal/10854	https://doi.org/10.1007/s10854-020-04694-9		5
Atomic mapping of Li:ZnO thin films and its spectroscopic analysis	Ali sadekKadari ,AbdelkaderNebattiEch- Chergui, Sanat Kumar Mukherjee, Leonardo Velasco, Rajan Kumar Singh, Mohamed walidMohamedi, ErdalAkyildiz, AbdelhalimZoukel,	Physics	Inorganic Chemistry Communicati ons	2021	13 87- 70 03				6

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	Kouider Driss-Khodja, Bouhalouane Amrani, Mohammed Reda Chellali								
Enhanced attraction between particles in a bidisperse mixture with random pairwise interactions	Madhu Priya, Prabhat K. Jaiswal	Physics	PHASE TRANSITIONS	2020	01-15-94	https://www.worldscientific.com/worldscinet/ijmpb	DOI: 10.1142/S0217979219502205		7
Flow behaviour of a model colloid-polymer mixture using mode-coupling theory	Madhu Priya	Physics	AIP Conference Proceedings	2020	00-94-24-3X	https://www.sciencedirect.com/journal/inorganic-chemistry-communications	https://doi.org/10.1016/j.inche.2021.108852		8
Host-parasite coevolution: Role of selection, mutation, and asexual reproduction on evolvability	Madhu Priya, Prabhat K. Jaiswal and Manish Dev Shrimali	Physics	AIP Conference Proceedings	2020	00-94-24-3X				9
Host-parasite coevolution:	Madhu Priya, Prabhat K.	Physics	AIP, Chaos	2020	10	https://	https://		10

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Role of selection, mutation, and asexual reproduction on evolvability	Jaiswal and Manish Dev Shrimali				54-1500	www.researchgate.net/journal/Phase-Transitions-1029-0338	doi.org/10.1080/01411594.2020.1813287		
Investigation of artificial neural network performance in the aerosol properties retrieval	Nishi Srivastava, D. Vignesh and Nisheeth Saxena	Physics	Journal of Water and Climate Change	2021	2040-2244				11
Impact of meteorological parameterization schemes on CTM model simulations	Nishi Srivastava, Nadege Blond	Physics	Atmospheric Environment	2022	0957-1272	https://doi.org/10.1063/5.0016578			12
Structural, thermal stability and electrical conductivity of zirconium substituted barium cerate ceramics	Bibek Kumar Sonu, Ela Sinha	Physics	Journal of Alloys and Compounds	2020	0925-8388				13
Correlation between experimental and theoretical study of scheelite and wolframite-type tungstates	P. Yadava, Prabal Dev Bhuyan, S.K. Rout, Yogesh Sonvaned, Sanjeev K. Gupta, E. Sinha	Physics	Materials Today Communications	2020	2352-4928	https://aip.scitation.org/journal/apc			14
Structural and dielectric properties of Cu-doped α -ZnMoO ₄ ceramic system for enhanced green light emission and potential	Sameer Kumar Tiwari, Anterdipan Singh, Pritam Yadav, Bibek Kumar Sonu, Rolly Verma, S. K.	Physics	Journal of Materials Science: Materials in Electronics	2021	0957-4522	https://doi.org/10.1063/5.0016578			15

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microwave applications	Rout, Ela Sinha									
Sliding Wear behaviour of Thermally Sprayed WC 20 Cr3C2-7Ni and La2 O3 Composite coatings	Mishra Tribhuwan Kishore, Kumar Arbind, Sinha Sanjay Kumar	Physics	Emerging Materials Research	2021	20460155, 20460147					16
Experimental investigation and study of HVOF Sprayed WC- 12Co WC- 10 Co-4 Cr and Cr3 C2- 25 Ni Cr Coating on its sliding wear behaviour	Mishra Tribhuwan Kishore, Kumar Arbind, Sinha Sanjay Kumar	Physics	International Journal of Refractory Metals and hard Materials	2021	0263-4368.	https://aip.scitation.org/	https://doi.org/10.1063/5.0010057			17
Revisiting Cosmic Microwave background radiation using blackbody Radiation inversion	KostavKonar, Kinshuk Bose and R K Paul	Physics	Sci Rep 11,	2021	2045-2322					18
Correlation between experimental and theoretical study of scheelite and wolframite-type tungstates	P. Yadava, Prabal Dev Bhuyanb, S.K. Routa, Yogesh Sonvaned, Sanjeev K. Gupta, E. Sinha	Physics	Materials Today Communications	2020	2352-4928.	https://www.waponline.com/jwcc	https://doi.org/10.2166/wcc.2021.336			19
Optical Signal Transmission through Masked Aperture to Extend the Depth of Focus in Optical Coherence Tomography	Pawan K. Tiwari, K. P. S. Parmar, Suman Pandey	Physics	Majlesi Journal of Electrical Engineering	2020	2345-377X	http://mjee.iu.ac.ir/index.php/ee	http://mjee.iu.ac.ir/index.php/ee	Yes		20

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Electrical Discharges: An Emerging Modality in Sterilization, Disinfection, and Therapeutics	Soumyadeep C. Sarkar , Niharika Verma , Pawan K. Tiwari	Physics	Majlesi Journal of Telecommu- nication Devices	2021	23 45- 37 7X	https://doi.org/10.29252/mjee.14.4.93	https://doi.org/10.29252/mjee.14.4.93	Yes	21
Pivotal Role of Quantum Dots in the Advancement of Healthcare Research	Pawan K. Tiwari, Mugdha Sahu, Gagan Kumar and Mohsen Ashourian	Physics	Computational Intelligence and Neuroscience	2021	16 87- 52 73	http://mjee.iiumajlesi.ac.ir/index.php/ee	http://mjee.iiumajlesi.ac.ir/index.php/ee	Yes	22


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NAAC Metric 3.4.6 Number of books and chapters in edited volumes published per teacher during 2020-21 (15)

3.4.6 Number of books and chapters in edited volumes published per teacher during the last five years (15)								
3.4.6.1: Total number of books and chapters in edited volumes / books published, and papers in national/international conference-proceedings year wise during the last five year								
Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Year of publication	ISBN/ISSN number of the proceeding	Whether at the time of publication affiliating institutions was same (Yes/No)	Name of the publisher
None								


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Department/Section: Physics

NAAC Metric 5.1.2 Average percentage of students benefited by career counseling and guidance for competitive examinations offered by the Institution during the last 2020-21 (10)

5.1.2 Average percentage of students benefited by career counseling and guidance for competitive examinations offered by the Institution during the last 2020-21 years (10)			
Year	Name of the Activity conducted by the HEI to offer guidance for competitive examinations & career counseling offered by the institution during the last five years	Number of students attended / participated	Link to the relevant document
None			


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Department/Section: Physics

NAAC Metric 5.2.3 Percentage of recently graduated students who have progressed to higher education (previous graduating batch)
(15)

Sl. No.	Name of student enrolling into higher education	Program graduated from	Name of institution admitted to	Name of programme admitted to
	None			


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NAAC Metric 3.1.2 The institution provides seed money to its teachers for research (average per year INR in Lakhs) (3)

3.1.2 The institution provides seed money to its teachers for research (average per year INR in Lakhs) (3)

Name of the teacher provided with seed money	The amount of seed money	Year of receiving	Link to the policy document for Sanction of seed money / grants for research from the institution
Nil	Nil	Nil	Nil



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Department/Section: Physics

NAAC Metric 3.1.4 Number of JRFs, SRFs, Post Doctoral Fellows, Research Associates and other research fellows enrolled in the institution during 2020-2021 (4)
3.1.4 Number of JRFs, SRFs, Post Doctoral Fellows, Research Associates and other research fellows enrolled in the institution during 2020-2021 (4)

Sl.No	Name of Research fellow	Year of enrolment	Duration of fellowship	Type of the fellowship	Granting agency	Qualifying exam if any (NET, GATE, etc.)	
1	Aashishmehta	2021	1 YR	INSTITUTE	IRF POST	NIL	1
2	ApurbaTewari	2021	1 YR	INSTITUTE	IRF POST	NIL	1
3	VIGNESH D PHD/AP/1005/20	2021	1 YR	PROJECT	DST- INSPIRE	NIL	1
4	SHUVALAXMI DAS PHD/AP/10006/20	2021	1 YR	INSTITUTE	IRF POST	NIL	1
5	MunchunKumari	2021	1 YR	INSTITUTE	IRF POST	NIL	3



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NAAC Metric

3.1.6 Percentage of departments with UGC-SAP, CAS, DST-FIST, DBT, ICSSR and other recognitions by national and international agencies (Data for 2020-2021 year) (5)

3.2.1 Extramural funding for Research (Grants sponsored by the non-government sources such as industry, corporate houses, international bodies for research projects) endowments, Chairs in the University during the last five years (INR in Lakhs) (5)

3.2.2 Grants for research projects sponsored by the government agencies during the last five years (INR in Lakhs) (10)

2020-21

3.2.3 Number of research projects per teacher funded by government and non-government agencies during the last five years (5)

2020-21

Name of the Scheme/Project/ Endowments/ Chairs	Name of the Principal Investigator/ Co Investigator (if applicable)	Name of the Funding agency	Type (Government/Non-Government)	Department	Year of Award	Funds provided (INR in lakhs)	Duration of the project
None							



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NAAC Metric 3.4.2

3.4.2 The institution provides incentives to teachers who receive state, national and international recognitions/awards

1. Commendation and monetary incentive at a University function
2. Commendation and medal at a University function
3. Certificate of honor
4. Announcement in the Newsletter / website

Name of full time teachers receiving awards from state level, national level, international level	Year of Award	PAN	Designation	Name of the award, fellowship, received from Government or Government recognised bodies	Name of the Awarding Agency	Incentives/Type of the incentive given by the HEI in recognition of the award	Link to the relevant document
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil



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NAAC Metric 3.4.3 & 3.4.3.1

3.4.3 Number of Patents published/awarded during 2020-2021 (10)

3.4.3.1: Total number of Patents published/awarded year wise during 2020-2021

Name of the Patenter	Patent Number	Title of the patent	Year of Award of patent
Nil	Nil	Nil	Nil



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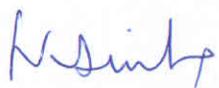
NAAC Metric

3.5.2 Revenue generated from consultancy and corporate training during 2020-2021 (INR in Lakhs) (15)

3.5.2.1: Total amount generated from consultancy and corporate training year wise during 2020-2021 (INR in lakhs)

Revenue generated from consultancy during 2020-2021

Name of the consultant	Name of consultancy project	Consulting/Sponsoring agency with contact details	Revenue generated (INR in Lakhs)		
			Year		
Nil	Nil	Nil	Nil	Nil	
Revenue generated from corporate training during the last five years					
Names of the teacher-consultants/corporate trainers	Title of the corporate training program	Agency seeking training with contact details	Year	Revenue generated (amount in rupees)	Number of trainees
Nil	Nil	Nil	Nil	Nil	Nil



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3.7.2 Number of functional MoUs with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years (10)

3.7.2.1: Number of functional MoUs with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years

Organisation with which MoU is signed	Name of the institution/ industry/ corporate house	Year of signing MoU	Duration	List the actual activities under each MOU year wise	Number of students/teachers participated under MoUs
Jharkhand state pollution control board and Ranchi Municipal Corporation		2021	-	City specific interventions and action plan	1


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NAAC Metric 6.3.2 Average percentage of teachers provided with financial support to attend conferences / workshops and towards membership fee of professional bodies during 2020-2021 (10)

Year	Name of teacher	PAN	Name of conference/ workshop attended for which financial support provided	Name of the professional body for which membership fee is provided	Amount of support (in INR)
2020	DILIP KR SINGH	AXKPS4249L		Association for computing machinary	1770/-


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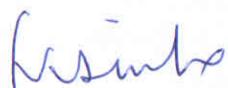
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NAAC Metric 6.3.4 Average percentage of teachers undergoing online/ face-to-face Faculty Development Programmes (FDP)during 2020-2021(Professional Development Programmes, Orientation / Induction Programmes,Refresher Course, Short Term Course etc.,)
(8)

Name of teacher who attended	Title of the program	Duration (from – to)	Page No.
Dr. Dilip Kumar Singh	1st Faculty Induction Programme	26-11-2020- 23-12-2020	1
Dr. Sanat Mukherjee	Indus Synchrotrons User's Meeting (ISUM-2)	28-07-2020- 29-07-2020	2
Dr. Sanat Mukherjee	FDP on Delivering Online Course using Canvas LMS	27-07-2020- 05-08-2020	3
Dr. MadhuPriya	1st Faculty Induction Programme	03-03-2021- 30-03-2021	4
Dr. MadhuPriya	FDP on Inclcating universal human values in technical education	07-06-2021- 11-06-2021	5
Dr. MadhuPriya	FDP on Cyber security	08-02-2021- 12-02-2021	6
Dr. SaurabhLahiri	1st Faculty Induction Programme	26-11-2020- 23-12-2020	7
Dr. Dilip Kumar Singh	FDP on Sensor Technology	21-09-2020- 25-09-2020	8
Dr. Dilip Kumar Singh	FDP on Photonics	28-09-2020- 02-10-2020	9
Dr. Nishi Shrivastava	FDP on Artificial Intelligence and Machine Learning in Healthcare	27-27-2020- 31-07-2020	10
Dr. Nishi Shrivastava	FDP on "Earth system science for society"	30-11-2020- 05-12-2020	11
Dr. Nishi Shrivastava	FDP on Matlab& Its applications in AI & ML	19-05-2020-	12

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		26-05-2020	
Dr. Nishi Shrivastava	AI & DATA Analytics with MATLAB	08-06-2020- 15-06-2020	13
Dr. Nishi Shrivastava	FDP on Internet of Things	04-01-2021- 08-01-2021	14
Dr. Nishi Shrivastava	FDP on Research Methodology	07-12-2020- 12-11-2020	15
Dr. Nishi Shrivastava	Online GIS Program using QGIS	07-09-2020- 27-09-2020	16
Dr. SaurabhLahiri	FDP on Cyber security and Investigation tools	11-09-2020- 15-09-2020	17
Dr. SaurabhLahiri	FDP on Quantum Computing	19-10-2020- 23-10-2020	18



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NAAC Metric 1.1 Number of programs offered year wise during (2020-21)

Program Code	Program Name	Year of offering
M.Sc (Physics)	M.Sc Physics	2020
I.M.Sc (Physics)	Integrated M.Sc Physics	2020
M.Sc (Physics)	M.Sc Physics	2021
Integrated (M.Sc Physics)	Integrated M.Sc Physics	2021
Ph.D Physics	Ph.D	2020
Ph.D Physics	Ph.D	2021



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Department/Section: Physics**NAAC Metric 2.1** Number of students enrolled year wise during (2020-21)

2.1 Number of students enrolled year wise during the last five years		
Year of enrollment	Name	Student enrollment number
2020	Ashish Mehta	PhD/AP/10002/20
2020	ApurvaTewari	PhD/AP/10004/20
2020	Vignesh D	PhD/AP/10005/20
2020	Shuvalaxmi Das	PhD/AP/10006/20
2020	Dhanranjan Kumar	PhD/AP/10003/20
2020	SaumyaSuvarna	PHD/AP/10001/20
2020	MunchunKumari	PhD/AP/10051/20
2021	SmitAnand	PhD/AP/10003/21
2021	Somita Dhal	PhD/AP/10004/21
2021	ManishaKumari	PhD/AP/10005/21
2021	Manish Kumar Singh	PhD/AP/10001/21
2021	Gayatri Dash	PhD/AP/10002/21
2020	ISHANI CHAKRAVARTTY	SAP/10001/20
2020	ANUPAM RANA	SAP/10002/20
2020	MANASHISH MAHARANA	SAP/10003/20
2020	MOUSAM KUMAR BHANJA	SAP/10004/20
2020	ASFIYA ZAMAN	SAP/10005/20
2020	DEEPANNITA DAS	SAP/10007/20
2020	ANITA KUMARI	SAP/10009/20
2020	Rishi Kumar	IPH/10001/20
2020	SHARON XALXO	IPH/10002/20
2020	GLINT ACE KURIAKOSE	IPH/10003/20
2020	AAYUSH CHINMAY BHARADWAJ	IPH/10005/20

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2020	SRIJITA DAS	IPH/10006/20
2020	SHLOK LAL	IPH/10008/20
2020	BASHUDEB PRAKASH	IPH/10009/20
2020	PRIYANSHU HARSH KHESS	IPH/10011/20
2020	SAI SATYAPRAKASH BISWAL	IPH/10012/20
2020	URVI SHARMA	IPH/10013/20
2020	SHRADHA SANTOSH NAIR	IPH/10014/20



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Department/Section: Physics**NAAC Metric 3.1**List of courses offered across all programs during (2020-21)

3.1 List of courses offered across all programs during last five years (2020-21)				
Program name	Program name	Course code	Course name	Year of offering the course
IMSC	IMSC	CA201	OBJECT ORIENTED PROGRAMMING USING JAVA	2020
IMSC	IMSC	CA202	OBJECT ORIENTED PROGRAMMING USING JAVA LAB	2020
IMSC	IMSC	CH213	CHEMISTRY II	2020
IMSC	IMSC	CH214	CHEMISTRY II LAB	2020
IMSC	IMSC	IMP7002	MODERN COMPUTATIONAL TECHNIQUES & PROGRAMMING	2020
IMSC	IMSC	MA301	PROBABILITY AND STATISTICS	2020
IMSC	IMSC	MC201	NCC	2020
IMSC	IMSC	MC202	NSS	2020
IMSC	IMSC	MC203	PT & GAMES	2020
IMSC	IMSC	MC204	CREATIVE ARTS	2020
IMSC	IMSC	ME4005	NON CONVENTIONAL ENERGY	2020
IMSC	IMSC	PH201	THERMAL PHYSICS	2020
IMSC	IMSC	PH202	DIGITAL SYSTEMS AND APPLICATIONS	2020
IMSC	IMSC	PH203	CLASSICAL DYNAMICS	2020
IMSC	IMSC	PH204	THERMAL PHYSICS LAB	2020
IMSC	IMSC	PH205	DIGITAL SYSTEMS AND APPLICATIONS LAB	2020
IMSC	IMSC	PH206	CLASSICAL DYNAMICS LAB	2020
IMSC	IMSC	PH301	QUANTUM MECHANICS AND APPLICATIONS	2020
IMSC	IMSC	PH302	SOLID STATE PHYSICS	2020
IMSC	IMSC	PH303	ADVANCED MATHEMATICAL PHYSICS	2020
IMSC	IMSC	PH306	MATERIALS SCIENCE AND NANOTECHNOLOGY	2020
IMSC	IMSC	PH308	QUANTUM MECHANICS LAB	2020

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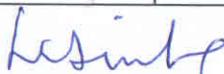
IMSC	IMSC	PH309	SOLID STATE PHYSICS LAB	2020
IMSC	IMSC	PH310	ADVANCED MATHEMATICAL PHYSICS LAB	2020
IMSC	IMSC	PH313	MATERIALS SCIENCE AND NANOTECHNOLOGY LAB	2020
IMSC	IMSC	SAP1001	MATHEMATICAL METHODS IN PHYSICS	2020
IMSC	IMSC	SAP1003	ELECTRODYNAMICS	2020
IMSC	IMSC	SAP1004	PHYSICS LABORATORY - I	2020
IMSC	IMSC	SAP1005	CLASSICAL MECHANICS AND RELATIVITY	2020
IMSC	IMSC	SAP1107	QUANTUM MECHANICS	2020
IMSC	IMSC	SAP2007	STATISTICAL PHYSICS	2020
IMSC	IMSC	SAP3002	PHYSICS LAB-IV	2020
IMSC	IMSC	SAP3007	ADVANCED ELECTRODYNAMICS	2020
IMSC	IMSC	SAP3011	QUANTUM THEORY OF SOLIDS	2020
IMSC	IMSC	SAP3017	FIBER AND INTEGRATED OPTICS	2020
IMSC	IMSC	SAP3104	PHYSICS LAB-V	2020
IMSC	IMSC	SAP3115	ADVANCED EXPERIMENTAL TECH.	2020
IMSC	IMSC	SAP3301	NUCLEAR AND PARTICLE PHYSICS	2020
MSC	MSC	PH500	PROJECT (PHASE-1)	2020
MSC	MSC	PH501	NUCLEAR AND PARTICLE PHYSICS	2020
MSC	MSC	PH502	ADVANCED QUANTUM MECHANICS	2020
MSC	MSC	PH503	LASER PHYSICS AND APPLICATIONS	2020
MSC	MSC	PH506	FUNCTIONAL MATERIALS	2020
MSC	MSC	PH513	LASER PHYSICS LAB	2020
IMSC	IMSC	IMP10001	PROJECT/DISSERTATION	2021
IMSC	IMSC	SAP4029	INTRODUCTION TO NANOPHOTONICS	2021
IMSC	IMSC	SAP4031	PHOTONIC AND OPTOELECTRONICS DEVICES	2021
IMSC	IMSC	SAP4033	HOLOGRAPHY AND APPLICATIONS	2021
IMSC	IMSC	PH315	ELECTROMAGNETIC THEORY	2021
IMSC	IMSC	PH316	STATISTICAL MECHANICS	2021

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IMSC	IMSC	PH318	INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS	2021
IMSC	IMSC	PH320	ATMOSPHERIC PHYSICS	2021
IMSC	IMSC	PH322	ELECTROMAGNETICS LAB	2021
IMSC	IMSC	PH323	STATISTICAL MECHANICS LAB	2021
IMSC	IMSC	PH325	ATMOSPHERIC PHYSICS LAB	2021
IMSC	IMSC	PH327	INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS LAB	2021
IMSC	IMSC	MA207	MATHEMATICS-IV	2021
IMSC	IMSC	MC207	PT & GAMES	2021
IMSC	IMSC	PH207	MATHEMATICAL PHYSICS II	2021
IMSC	IMSC	PH208	ELEMENTS OF MODERN PHYSICS	2021
IMSC	IMSC	PH209	ANALOG SYSTEMS & APPLICATIONS	2021
IMSC	IMSC	PH210	MATHEMATICAL PHYSICS II LAB	2021
IMSC	IMSC	PH211	ELEMENTS OF MODERN PHYSICS LAB	2021
IMSC	IMSC	PH212	ANALOG SYSTEMS & APPLICATIONS LAB	2021
IMSC	IMSC	CE101	ENVIRONMENTAL SCIENCE	2021
IMSC	IMSC	CS101	PROGRAMMING FOR PROBLEM SOLVING	2021
IMSC	IMSC	MA108	MATHEMATICS III	2021
IMSC	IMSC	MC107	PT & GAMES	2021
IMSC	IMSC	PH105	MATHEMATICAL PHYSICS-I	2021
IMSC	IMSC	PH106	WAVES AND OPTICS	2021
IMSC	IMSC	PH107	MATHEMATICAL PHYSICS-I LAB	2021
IMSC	IMSC	PH108	WAVES AND OPTICS LAB	2021
IMSC	IMSC	SAP4009	PHYSICS OF SOLID STATE DEVICES	2021
IMSC	IMSC	SAP4011	ADVANCED MATERIALS SCIENCE	2021
IMSC	IMSC	SAP4015	PHYSICS OF THIN FILMS	2021
IMSC	IMSC	PH321	ADVANCED EXPERIMENTAL TECHNIQUE	2021
IMSC	IMSC	PH326	ADVANCED EXPERIMENTAL TECHNIQUE LAB	2021
IMSC	IMSC	MC208	CREATIVE ARTS	2021

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IMSC	IMSC	SAP2001	ELECTRONICS DEVICES AND CIRCUITS	2021
IMSC	IMSC	SAP2002	PHYSICS LABORATORY II - LASER AND ADVANCED OPTICS LABORATORY	2021
IMSC	IMSC	SAP2004	PHYSICS LABORATORY III - ELECTRONICS AND INSTRUMENTATION LABORATORY	2021
IMSC	IMSC	SAP2011	ADVANCED QUANTUM MECHANICS	2021
IMSC	IMSC	SAP2013	LASER PHYSICS AND APPLICATIONS	2021
IMSC	IMSC	SAP2105	ATOMIC AND MOLECULAR SPECTROSCOPY	2021
IMSC	IMSC	SAP2109	CONDENSED MATTER PHYSICS	2021
IMSC	IMSC	MC206	NSS	2021
IMSC	IMSC	MC205	NCC	2021
MSC	MSC	PH 520	THEORY OF DIELECTRICS AND FERROICS	2021
MSC	MSC	PH 550	PROJECT (PHASE-II)	2021
MSC	MSC	PH517	NONCONVENTIONAL ENERGY MATERIALS	2021
MSC	MSC	EC599	SENSORS AND ACTUATORS	2021
MSC	MSC	PH408	STATISTICAL PHYSICS	2021
MSC	MSC	PH409	ATOMIC AND MOLECULAR SPECTROSCOPY	2021
MSC	MSC	PH410	ELECTRONIC DEVICES & CIRCUITS	2021
MSC	MSC	PH411	CONDENSED MATTER PHYSICS	2021
MSC	MSC	PH412	ELECTRONICS LAB	2021
MSC	MSC	PH413	CONDENSED MATTER PHYSICS LAB	2021


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NAAC Metric 1.1.2 Percentage of programmes where syllabus revision was carried out during the last 2020-21

1.2.2 Percentage of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented 2020-21

1.1.2 Percentage of programmes where syllabus revision was carried out during the last five years (20)				2020-21			
1.2.2 Percentage of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented (20)							
Programme Code	Programme name	Year of Introduction	Status of implementation of CBCS / Elective Course System (ECS)	Year of implementation of CBCS / Elective Course System (ECS)	Year of revision (if any)	If revision has been carried out in the syllabus during last 5 years, Percentage of content added or replaced	Link to the relevant documents
			CBCS : Yes/No ECS: Yes/No	CBCS: ECS:	CBCS: ECS:	CBCS: ECS:	CBCS: ECS:
M.Sc (Physics)	M.Sc Physics	2018	Yes	2018			
I.M.Sc (Physics)	Integrated M.Sc Physics	2018	Yes	2018			
Ph.D Physics	Ph.D	2018	Yes	2018			


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NAAC Metric 1.2.1 Percentage of new courses introduced of the total number of courses across all programmes offered during the 2020-21

1.1.3 Average percentage of courses having focus on employability/ entrepreneurship/ skill development during the last five years (10)					
1.2.1 Percentage of new courses introduced of the total number of courses across all programmes offered during the last five years (30)					
Course Code	Name of the Course	Year of introduction	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development	Link to the relevant document	Page No
PH113	B.Tech	2020	Yes		1



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NAAC Metric 3.4.7E-content is developed by teachers (2020-21)

3.4.7 E-content is developed by teachers : (10) 1. For e-PG-Pathshala, 2. For CEC (Under Graduate), 3. For SWAYAM, 4. For other MOOCs platform, 5. For NPTEL/NMEICT/any other Government Initiatives 6. For Institutional LMS						
4.3.5 Institution has the following Facilities for e-content development (5) 1.Mediacentre 2. Audio visual centre, 3. Lecture Capturing System(LCS) 4. Mixing equipments and softwares for editing						
Name of the teacher	Name of the module developed	Platform on which module is developed	Date of launching e content	Link to the relevant document and facility available in the institution	List of the e-content development facility available	Provide link to videos of the media centre and recording facility
None						



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