



Central University of Himachal Pradesh

(ESTABLISHED UNDER CENTRAL UNIVERSITIES ACT 2009)

Dharamshala, Himachal Pradesh-176215



NAAC Criterion-I

Key Indicator –1.3.4

List of students undertaking the Research Projects and Completion Certificates

1.3.4 Evidences



Department of Physics and Astronomical Science
Central University of Himachal Pradesh, Dharamshala,
Kangra



Central University of Himachal Pradesh

(ESTABLISHED UNDER CENTRAL UNIVERSITIES ACT 2009)

Dharamshala, Himachal Pradesh-176215



Department of Physics and Astronomical Science

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हिमाचल प्रदेश केंद्रीय विश्वविद्यालय

Central University of Himachal Pradesh
(Established under Central Universities Act, 2009)



शाहपुर परिसर, शाहपुर, जिला कांगड़ा (हि.प्र.) - 176206

ShahpurParisar, Shahpur, Distt. Kangra (HP) - 176206

Website: www.cuhimachal.ac.in

File. No: PAS/1-1/CUHP/12/36

Dated: 11-04-2022

Circular

PAS 548.M.Sc. Dissertation to M.Sc.Students of session 2020-22.

S. No.	Roll Number	Name	Title of the dissertation	Name of supervising faculty
1.	CUHP20PGPAS01	ADITYA BHARTI	Investigation of Gamma Ray Shielding Properties of Zirconium doped Silica based Glass by using X-com	Dr.VikasAnand
2.	CUHP20PGPAS02	AMAN SHARMA	Study of 12C Elastic Scattering using: Phase Function Method	Prof. OSKS Sastri
3.	CUHP20PGPAS03	AMIT KUMAR	Synthesis and Rheological Properties of Fe3O4 based magnetic nano-fluid	Dr.Noorjahan
4.	CUHP20PGPAS04	AMIT KUMAR	A Comparative Study of scattering with 3H and 3He Nuclei using Phase Function Method	Prof. OSKS Sastri
5.	CUHP20PGPAS05	ANAND ARYA	Absent	Dr.SurenderPratap
6.	CUHP20PGPAS06	ANCHAL DEVI	Energy Storage Device	Dr. Rajesh Kumar Singh
7.	CUHP20PGPAS08	CHANDAN KUMAR	Green Synthesis and Characterization of NiO-ZnO Nano Particles for the Degradation of Methylene Blue	Dr.PawanHeera
8.	CUHP20PGPAS09	GAGANDEEP	Perturbation in Tri-Bimaximal pattern of Neutrino mixing matrix and associated Phenomenology.	Dr.SurenderVerma
9.	CUHP20PGPAS10	GOURI PANDEY	"Ab-Initio Study of Superconductivity in Metal Hydrides"	Dr.Jagdish Kumar
10.	CUHP20PGPAS11	HARINDER MOHAN	Electronics & Optical properties of MoS2	Dr.SurenderPratap
11.	CUHP20PGPAS12	KAVITA KUMARI	Self-adjoint extensions of operators	Dr.AyanChatterjee
12.	CUHP20PGPAS13	LUXMI DEVI	Solid oxide fuel cell	Prof. Rajesh Kumar
13.	CUHP20PGPAS14	NAFISA KHATOON	Study of Integer Quantum Hall effect in Graphene	Dr.SurenderPratap
14.	CUHP20PGPAS15	NARESH KUMAR	Magneto viscous Effects in Ferro fluids	Dr.Norjhaan
15.	CUHP20PGPAS16	NEERAJ WALIA	To study the effect of substitution of Magnetic Elements	Dr.Jagdish Kumar

16.	CUHP20PGPAS18	PARYAG SHARMA	Probing the environment of high redshift quasars using proximity effects	Prof. Hum Chand
17.	CUHP20PGPAS19	PAVESH CHAUHAN	Seesaw Mechanism	Prof. Bhag Chand Chauhan
18.	CUHP20PGPAS20	PRIYA CHANDEL	Study of variation of Hydration number of mixture of niacin with alcohol in aqueous medium at different temperature by using ultrasonic interferometer	Dr.GourishankarSahoo
19.	CUHP20PGPAS21	RAJAT KUMAR	Analyzing absorption line seen in distant QSO spectra	Prof. Hum Chand
20.	CUHP20PGPAS22	RAJESH KUMAR	Optimum energy and angular momentum for fusion of $40\text{ AR}+110\text{ Pd}$ using intrinsic fusion and symmetric fission barriers analysis	Dr.Dalip Singh Verma
21.	CUHP20PGPAS23	RIYA KOUNDAL	SIBM self-interacting Dark Matter	Prof. Bhag Chand Chauhan
22.	CUHP20PGPAS24	SAHIL	Study of Variation of Wada's Constant of Mixture of Niacin with Alcohol in Aqueous Medium at Different Temperatures	Dr.GourishankarSahoo
23.	CUHP20PGPAS25	SAHIL KUMAR	Leptonic Unitarity Triangles and CP Violation	Dr.SurenderVerma
24.	CUHP20PGPAS26	SHAKUNTLA	Lecpogenesis via Baryogenesis	Prof. Bhag Chand Chauhan
25.	CUHP20PGPAS27	SHAMLI SANDHU	Study of variation Rao's constant of mixture of Niacin with Alcohol in Aqueous Medium at different Temperatures	Dr.GourishankarSahoo
26.	CUHP20PGPAS28	VISHAL	Hydrogen Fuel Cell (Solid Oxide Fuel Cell)	Prof. Rajesh Kumar
27.	CUHP20PGPAS29	SHUBHAM BHARMORIA	Electrode Materials for Super capacitors	Dr. Rajesh Kumar Singh
28.	CUHP20PGPAS30	SONAM CHAUHAN	Study of variation of Acoustical Impedance of Mixture of Niacin with Alcohol in Aqueous Medium at different Temperatures	Dr.GourishankarSahoo
29.	CUHP20PGPAS31	SUNAINA	Neutrinoless Double Beta Decay	Prof. Bhag Chand Chauhan
30.	CUHP20PGPAS32	TANUJ CHAUHAN	Incident energy and angular momentum correlation to the yield of compound nucleus formed in $7\text{Li}+89\text{YMO}^*$ reaction	Dr.Dalip Singh Verma
31.	CUHP20PGPAS33	VISHAL MEHRA	Study of Deuteron Ground State using Quantum-Hamilton Jacobi Theory	Prof. OSKS Sastri

H. Chand

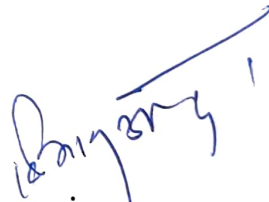
**Head,
Department of Physics and Astronomical Science**

Certificate

This is to certify that the work entitled: "Investigation of Gamma Ray Shielding Properties of Zirconium doped Silica based Glass by using X-com Software" is submitted to Central university of Himachal Pradesh, Department of Physics and Astronomical Science, in the School of Physical and Material Sciences as a part of project work (PAS548) for M.Sc. in Theoretical Physics by **Aditya Bharti**, Roll.no. CUHP20PGPAS01 under the supervision of Assistant Prof.

Dr. Vikas Anand.

Date:



Supervisor:
Assistant Prof. Dr. Vikas Anand

Certificate

It is certified that this project work entitled: **“Study of α - ^{12}C Elastic Scattering Using: Phase Function Method”** is part of project work (PAS 548) in relation to the fulfillment of Masters of Science in Physics for batch 2020-2022 by Aman Sharma, CUHP20PGPAS02 of the department of Physics and Astronomical Science in the School of Physical and Material Sciences, the Central University of Himachal Pradesh under the supervision of Prof. O.S.K.S. Sastri. We declare that no part of this project is submitted somewhere else for the award of any degree.

Date: July 1, 2022

Aman Sharma
CUHP20PGPAS02


Supervisor:
Prof. O.S.K.S. Sastri

DECLARATION

I hereby declare that this project entitled "Synthesis and Rheological Properties of Fe_3O_4 based magnetic nano-fluid" has been prepared by me during the year 2022 under the guidance of Dr. Noorjahan, Department of Physics Astronomical Science, Central University of Himachal Pradesh in the partial fulfillment of MSc degree. I also declare that this project is the outcomes of my own effort, that it has not been submitted to any other university for the award of any degree

Akumar

Amit Kumar

18/07/2022

Date

Noorjahan

Supervisor: Dr. Noorjahan


Certificate

This is to certify that the content of this project : **“A Comparative study of α -scattering with ^3H and ^3He Nuclei using Phase Function Method.”** is the bonafide work of Amit Kumar, Roll number CUHP20PGPAS04 submitted to Central University of Himachal Pradesh for the M.Sc. Physics. The original research work was carried out by him under my supervision in the academic year 2020-2022.

Date: 21-06-2022

Amit Kumar

Name : Amit Kumar

 21/06/22
Supervisor : Prof. O.S.K.S. Sastri

Certificate

This is to certify that the project report entitled "ELECTRODE MATERIALS FOR SUPERCAPACITORS" submitted to Department of Physics & Astronomical Science, Central University of Himachal Pradesh for the partial fulfillment of the Degree of **Master of Science (Physics)** is the record of original work carried out by **Anchal**, Reg. No. CUHP20GPAS06, under the supervision and guidance of **Dr. Rajesh Kumar Singh**. It is further certified that; the present work has not submitted elsewhere for any other degree.

Date: 8/8/22.


Supervisor

CENTRAL UNIVERSITY OF HIMACHAL PRADESH

CERTIFICATE

This is to certify that the project entitled “Green Synthesis and Charecterisation of NiO-ZnO Nano-particles for the Degradation of Mehtylene Blue” is submitted by **Mr.CHANDAN KUMAR,** (Roll NO- CUHP20PGPAS08) to this Institute in partial fulfillment of the requirement for the award of the degree of Master of Science in Department of Physics and Astronomical sciences, is a bonafied record of the work carried out under my supervision and guidance. It is further certified that no part of this thesis is submitted for the award of any degree.



Supervisor

Dr.PAWAN HEERA

Department of Physics ans Astronomical Science
Central University of Himachal Pradesh

DATE:

Certificate

This is to certify that the project report entitled "Perturbation in Tri-Bimaximal pattern of Neutrino mixing matrix and associated Phenomenology", submitted to the Department of Physics and Astronomical Science, Central University of Himachal Pradesh, in the partial fulfillment for the award of the degree of **M.Sc. in Physics**, is a record of bona fide work carried out by **Gagandeep**, Reg. No. CUHP20PGPAS09, under the supervision and guidance of **Dr. Surender Verma**.

It is further certified that, the present work has not submitted elsewhere for any other degree.


Date: 2/7/2022


Supervisor

Certificate

This is to certify that the project report entitled "AB-INITIO STUDY OF SUPERCONDUCTIVITY IN METAL HYDRIDES" submitted to Department of Physics & Astronomical Science, Central University of Himachal Pradesh for the partial fulfillment of the Degree of **Master of Science(Physics)** is the record of original work carried out by **Gouri Pandey**, Reg. No. CUHP20GPAS10, under my supervision. It is further certified that, the present work has not submitted elsewhere for any other degree.

Date:


Supervisor
02/05/2020


DECLARATION

I, **Harinder Mohan**, hereby confirm that the project report on “Electronic & Optical properties of MoS_2 ”, which I submitted in partial fulfilment of the requirements for the M.Sc. degree in physics at the Department of Physics and Astronomical Sciences of Central University of Himachal Pradesh, Dharamshala, District Kangra (H.P.), is original work I completed under **Dr. Surender Pratap** guidance. In my submission, I have expressed my thoughts in my own words, and where I have used the thoughts or words of others, I have correctly and completely cited and acknowledged those original sources.

I further confirm that I have followed to the standards of academic honesty and integrity and that I have not falsified or distorted any information, including ideas, facts, or sources, in my work.

In order to meet the requirements for the Master of Science (Specialization in Theoretical Physics) degree, I have submitted this project work for the PAS548 course.

I further declare that this project is the result of my own work and that I have not submitted it to another university for the purpose of receiving a degree.



CERTIFICATE

Dated : 15-07-22

Department of Physics and Astronomical Science
School of Physical and Material Sciences
Central University of Himachal Pradesh, Dharamshala
[Established under the Central Universities Act 2009]
Dharamshala, District Kangra
Himachal Pradesh [India]-176215

This is to certify that I, **Kavita Kumari**, have carried out the work embodied in the present project thesis for the full period prescribed under M.Sc Ordinances of the university. I declare to the best of my knowledge that no part of this project report was earlier submitted for the award of degree of any university.

Kavita

Signature of the Candidate

Name: Kavita Kumari

Enrollment No. CUHP20PGPAS12

AE 15/07/22
Signature of the Supervisor


[Signature]
Signature of Head of the Department

DECLARATION BY STUDENT

I hereby declare that the efforts taken in this work is to Study the structural and thermal properties of $\text{La}_{.50}\text{Ca}_{.50}\text{Co}_{.20}\text{Fe}_{.50}\text{O}_3$ perovskite anode material of solid oxide fuel cell using XRD. Guided by Prof. Rajesh Kumar and Co-guided by Dr. Surinder Paul.

Date: - 4/07/2022

Co-supervisor:
Dr. Surinder Paul



09/07/2022

Supervisor:
Prof. Rajesh Kumar

DECLARATION

I declare that this project named “**Study of Integer Quantum Hall effect in Graphene**”, submitted to the School of Physical and Matetial Sciences, Department of Physics and Astronomical Sciences of Central University of Himachal Pradesh, Dharamshala, District Kangra (H.P.), is the original work done by **Nafisa Khatoon**, Roll No. **CUHP20PGPAS14** under the supervision of **Dr. Surender Pratap**. I have submitted this project work for the completion of the course entitled PAS548 for the fulfillment of Master of Science degree (Specialization in Theoretical Physics). This work has not been submitted to any other institution or university for the fulfilment of any diploma or degree.

Date: 14 july, 2022



Superrvisor

Dr. Surender Pratap

DECLARATION BY STUDENT

I hereby declare that the efforts taken in this work is to synthesize and Study the structural and thermal properties of Fe_3O_4 using XRD and rheometer. Guided by Dr. Noor Jahan

Date: 2nd july 2022

Noor Jahan


Supervisor:

Dr Noorjahan

Certificate

Certified that this project entitled “**To study the effect of substitution of Magnetic Elements (Co, Cr, Mn, Fe) at Sb site in LiMgPtSb type quaternary Heuslers Alloys**” in part of the project work (PAS548) with the fulfillment of **M.Sc. in Theoretical Physics (2020-2022)** by **Neeraj Walia, Roll No. CUHP20PGPAS16** of the Department of Physics and Astronomical Science, in the School of Physical and Material Sciences, in the Central University of Himachal Pradesh under my supervision. It is further certified that, the present work has not submitted elsewhere for any other degree.

Date:


Supervisor 2/June
Dr. Jagdish Kumar

ABSTRACT

In this project we look at the problem of why we need seesaw model. The historical discovery of neutrino oscillations using solar and atmospheric neutrinos, and subsequent accelerator and reactor studies, has brought neutrino physics to the precision era. We note that CP effects in oscillation phenomena could be difficult to extract in the presence of unitarity violation. As a result upcoming dedicated leptonic CP violation studies should take into account the non-unitarity of the lepton mixing matrix. Restricting non-unitarity will shed light on the seesaw scale, and thereby guide us towards the new physics responsible for neutrino mass generation.

Certificate

This is to certify that the work entitled: "**Probing the environment of high redshift quasars using proximity effect**" is submitted to Central University of Himachal Pradesh, Department of Physics and Astronomical Science in the School of Physical and Astronomical Science as part of the project work (PAS548) for M.Sc. in Theoretical Physics by Paryag Sharma, Roll No. CUHP20PGPAS18 under the supervision of Prof. Hum Chand.

Date: 02/07/2022

H. Chand

Supervisor:
Prof. Hum Chand

CERTIFICATE

It is certified that the project work entitled " **VARIATION OF HYDRATION NUMBER OF MIXTURE OF NIACIN WITH ALCOHOL IN AQUEOUS MEDIUM AT DIFFERENT TEMPERATURE** " is submitted under the Supervision of Dr. Gourishankar Sahoo, as a component of the project work towards the partial fulfilment of M. Sc. Degree in Physics for academic year 2020-2022 by **PRIYA CHANDEL**, ROLL NO. **CUHP20PGPAS20**, of the Department of Physics and Astronomical Science, the School of Physical and Material Sciences, Central University of Himachal Pradesh.

We hereby state that no portion of this project have ever been submitted for completion of any degree.



**SIGNATURE OF
STUDENT**



SUPERVISOR

Certificate



It is certify that this project entitled “**Analyzing absorption line seen in distant QSO spectra**” for PAS548(Project Work Course) under the guidance and supervision of **Prof. Hum Chand** by **Rajat Kumar, Roll No. CUHP20PGPAS21** for the fulfillment of **M.Sc. in Theoretical Physics** for the batch 2020-2022 of the Department of Physics and Astronomical Science, in the School of Physical and Material Sciences Central University of Himachal Pradesh. We declare that no part of this project is submitted somewhere else for the award of any degree.

Signature
(Prof. Hum Chand)

DECLARATION

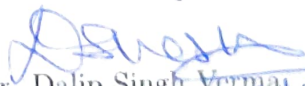
I hereby declare that the project work entitled “**Optimum energy and angular momentum for fusion of $^{40}\text{Ar}+^{110}\text{Pd}$ using intrinsic fusion and symmetric fission barriers analysis**” submitted to Department of Physics and Astronomical Sciences, School of Physical and Material Sciences of Central University of Himachal Pradesh, Dharamashala, District Kangra (H.P.), is a record of original work done by me under the guidance of Dr. Dalip Singh Verma. This project work is submitted for the partial fulfillment of the course entitled project work (PAS 548) for the award of M.Sc. Physics (Specialization in Theoretical Physics). The results presented in this project have not been submitted to any other University or Institute for the award of any degree or diploma.

Date: 06-07-2022

Rajesh Kumar

Rajesh Kumar

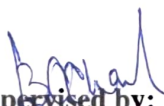
Supervisor


Dr. Dalip Singh Verma
6/7/22



Self Interacting Dark Matter

A project report submitted to the
Department of Physics and Astronomical Science
School of Physical and Material Sciences
in partial fulfillment for the award of degree of
Master of Science


Supervised by:
Dr. B.C. CHAUHAN

Submitted by:
Name - Riya Koundal
Roll No. - CUHP20PGPAS23

CENTRAL UNIVERSITY OF HIMACHAL PRADESH
DHARAMSHALA, DISTRICT KANGRA
HIMACHAL PRADESH-176215
INDIA
JULY 2022

DECLARATION

It is certified that the work contained in the project entitled "SELF INTER-ACTING DARK MATTER" has been carried out under the supervision of Dr. Bhag Chand Chauhan. It is, further, certified that the present work has not been submitted to any other institute for any degree/diploma. I have used material from other sources, I have given due credit to them by giving their details in the references.

Riya Koundal
Riya Koundal.

CERTIFICATE

It is certified that the project work entitled “**Study Of Variation Of Wada’s Constant Of Mixture Of Niacin With Alcohol In Aqueous Medium At Different Temperature**”, is submitted under the supervision of Dr. Gourishankar Sahoo, as a component of the project work toward the partial fulfillment of an M.Sc. in Physics for the 2020–2022 academic year by Mr. SAHIL, Reg. No. CUHP20PGPAS24 of the Department of Physics and Astronomical Sciences, School of Physical and Material Science, Central University of Himachal Pradesh.

We hereby state that no portion of this project has ever been submitted for completion of degree.



Signature of Candidate



Signature of Supervisor

Certificate

This is to certify that the project report entitled “Leptonic Unitarity Triangles and CP Violation”, submitted to the Department of Physics and Astronomical Science, Central University of Himachal Pradesh, in the partial fulfillment for the award of the degree of **M.Sc. in Physics**, is a record of bona fide work carried out by **Sahil Kumar**, Reg. No. CUHP20PGPAS25, under the supervision and guidance of **Dr. Surender Verma**. It is further certified that, the present work has not submitted elsewhere for any other degree.

Date: / /


Supervisor 2/7/22



Department of Physics and Astronomical Science
School of Physical and Material Sciences
Central University of Himachal Pradesh

Bhag Chand Chauhan
Supervised by:
Prof. Bhag Chand Chauhan

Submitted by:
Name-Shakuntla
Roll no.-CUHP20PGPAS26

Leptogenesis via Baryogenesis

Project Report

Under the course code PAS 548

**Submitted to Central University of Himachal Pradesh for partial fulfilment
of the Degree of Master of Science
(Specialisation in theoretical physics)**

July 12, 2022

DECLARATION

It is certified that the work contained in the project entitled "Baryogenesis via Leptogenesis has been done under the supervision of Dr. Bhag Chand Chauhan. It is also certified that the work has not been submitted to any other institute for any degree and whenever I have used materials from other sources, I have given due credit to them by giving their details in the references.

Shakuntla

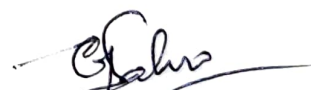
Shakuntla

Certificate

It is certified that the project work entitled **A Study of variation of Rao's constant of a mixture of Niacin with alcohol in aqueous medium at different temperatures** is submitted under the Supervision of Dr. Gourishankar Sahoo, as a component of the project work towards the partial fulfilment of M. Sc. Degree in Physics for academic year 2020-2022 by Miss. SHAMLI SANDHU, Roll No. CUHP20PGPAS27, of the Department of Physics and Astronomical Science, the School of Physical and Material Sciences, Central University of Himachal Pradesh. We hereby state that no portion of this project have ever been submitted for completion of any degree.

Date: 23-08-022

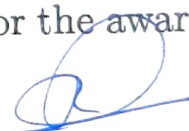

Name : Shamli Sandhu


Supervisor : Dr. Gourishankar Sahoo

CENTRAL UNIVERSITY OF HIMACHAL PRADESH

CERTIFICATE

This is to certify that the project entitled "Study the structural and thermal properties of $La_{.50}Ca_{.50}Co_{.20}Fe_{.50}O_3$ perovskite anode material of solid oxide fuel cell using XRD" is submitted by **Mr. VISHAL**, (Roll NO- CUHP20PGPAS28) to this Institute in partial fulfillment of the requirement for the award of the degree of Master of Science in Department of Physics and Astronomical sciences, is a bonafied record of the work carried out under my supervision and guidance. It is further certified that no part of this thesis is submitted for the award of any degree.



Supervisor

Pro. Rajesh Kumar and Surinder Paul

Department of Physics and Astronomical Science
Central University of Himachal Pradesh

DATE: 02-07-22

Certificate

This is to certify that the project report entitled "ELECTRODE MATERIALS FOR SUPERCAPACITORS" submitted to Department of Physics & Astronomical Science, Central University of Himachal Pradesh for the partial fulfillment of the Degree of **Master of Science (Physics)** is the record of original work carried out by **Shubham Bharmoria**, Reg. No. CUHP20GPAS29, under the supervision and guidance of **Dr. Rajesh Kumar Singh**. It is further certified that; the present work has not submitted elsewhere for any other degree.

Date: 21/08/22 .



Supervisor

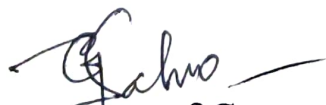
CERTIFICATE

It is certified that the project work entitled "A Study Of Variation Of Acoustical Impedance Of Mixture Of Niacin With Alcohol In Aqueous Medium At Different Temperature" is submitted under the Supervision of Dr. Gourishankar Sahoo, as a component of the project work towards the partial fulfilment of M. Sc. Degree in Physics for academic year 2020-2022 by Miss. SONAM CHAUHAN, Roll No. CUHP20PGPAS30, of the Department of Physics and Astronomical Science, the School of Physical and Material Sciences, Central University of Himachal Pradesh.

We hereby state that no portion of this project have ever been submitted for completion of any degree.



Signature of Student



Signature of Supervisor

Certificate

This is to certify that the work entitled: “**Study of Deuteron Ground State using Quantum-Hamilton Jacobi Theory**” is submitted to Central University of Himachal Pradesh, Department of Physics and Astronomical Science in the School of Physical and Astronomical Science as part of the project work (PAS548) for M.Sc. in Theoretical Physics by Vishal Mehra, Roll No. CUHP20PGPAS33 under the supervision of Prof.O.S.K.S. Sastri.

Date:


Vishal Mehra


Supervisor:

Prof.(Dr.) O.S.K.S. Sastri

Declaration

I hereby declare that this project entitled “ Angular momentum and incident energy correlation to the yield of compound nucleus formed in ${}^7\text{Li} + {}^{89}\text{Y} \rightarrow {}^{96}\text{Mo}^*$ reaction ” has been prepared by me during the year 2022 under the guidance of Dr. Dalip Singh Verma, Department of Physics Astronomical Science, Central University of Himachal Pradesh in the partial fulfillment of MSc degree. I also declare that this project is the outcomes of my own effort, that it has not been submitted to any other university for the award of any degree.

Date:



Tanuj Chauhan



Supervisor: Dr. Dalip Singh Verma



CERTIFICATE

This is to certify that the project report entitled "**Neutrinoless Double Beta Decay**" submitted to the Department of Physics and Astronomical Sciences, Central University of Himachal Pradesh, in the partial fulfillment for the award of the degree of **M.Sc.in Physics**, is a record of bonafide work carried out by **Sunaina, Reg. No. CUHP20PGPAS31**, under the supervision and guidance of **Dr. Bhag Chand Chauhan**.

It is further certified that, the present work has not submitted elsewhere for any other degree.

Date:


Supervisor