



THE ASSAM
ROYAL GLOBAL UNIVERSITY

“A STUDY OF DARK MATTER WITH SPIRAL GALAXY ROTATION CURVES”

A report submitted in partial fulfillment of the requirements for the degree of

Master of Science in Physics

Offered by

Royal School of Applied and Pure Sciences

Submitted by:

MOSTAQUE AHMED

Registration No: 1201059

Roll No: 204012014

M.Sc. 4th Semester

Department of Physics

RSAPS

Under the supervision of

Dr. Pijush Kanti Dhar

Professor

Department of Physics, RGU

**ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
THE ASSAM ROYAL GLOBAL UNIVERSITY, GUWAHATI**

Anuradha Devi

Dean, RSAPS
The Assam Royal Global University

August 2022



THE ASSAM

ROYAL GLOBAL UNIVERSITY

**ROYAL SCHOOL OF APPLIED & PURE SCIENCES
THE ASSAM ROYAL GLOBAL UNIVERSITY, GUWAHATI**

**DEPARTMENT OF PHYSICS
CERTIFICATE OF APPROVAL**

I hereby certify that the Project entitled "A STUDY OF DARK MATTER WITH SPIRAL GALAXY ROTATION CURVES" has been prepared by MOSTAQUE AHMED under my guidance and supervision, for the partial fulfillment of the requirements for the degree of Master of Science in Physics.

Date: 30/7/2022
Place: Guwahati

P.K. Dhar
30/7/2022

Dr. PIJUSH KANTI DHAR

Professor

Department of Physics

Royal School of Applied and Pure Sciences
The Assam Royal Global University, Guwahati

Anusudha Devi

Dean, RSAPS
The Assam Royal Global University



ROYAL GLOBAL UNIVERSITY
GUWAHATI

SEMINAR REPORT ON
“Metamaterial structure based electromagnetically induced transparency effect and sensing application”

MASTER OF SCIENCE

IN

DEPARTMENT OF PHYSICS

SUBMITTED BY
DIBBYAJYOTI MAZUMDAR

ROLL No- 204012008

Under the supervision of

Dr. Maidul Islam

Assistant Professor

DEPARTMENT OF PHYSICS
ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI

AUGUST, 2022

Arunadha Devi

Dean, RSAPS
The Assam Royal Global University

DEPARTMENT OF PHYSICS
CERTIFICATE OF APPROVAL

I hereby recommend that the project report prepared under my supervision by Dr. Maidul Islam titled **Metamaterial structure based electromagnetically induced transparency effect and sensing application** be accepted in a partial fulfillment of the requirements for the degree of Master of Science.

Date : 05/08/2022

Place: Guwahati

Maidul 5/8/22

Dr. Maidul Islam

Assistant Professor
Department of Physics
RSAPS, RGU

Anusudha Devi

Dean, RSAPS
The Assam Royal Global University



ROYAL GLOBAL UNIVERSITY
— GUWAHATI —

*A project/dissertation work submitted for the partial fulfilment of the degree of Master of
Science in Physics*

on

“DIATOM AS EM WAVE ABSORBER”

Submitted by

LEEZA DUTTA

Roll No.: 204012010

Reg. No.: 1201055

M. Sc Physics

Semester: IV

Supervised by

Dr. GITANJAL DEKA

Assistant Professor

Department of Physics,

RSAPS, The Assam Royal Global University

Guwahati-781035 (India)

Department Of Physics

**ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
THE ASSAM ROYAL GLOBAL UNIVERSITY, GUWAHATI
AUGUST 2022**

Anusudha Deka

Dean, RSAPS

The Assam Royal Global University

ROYAL SCHOOL OF APPLIED & PURE SCIENCES
THE ASSAM ROYAL GLOBAL UNIVERSITY, GUWAHATI



ROYAL GLOBAL UNIVERSITY
GUWAHATI

DEPARTMENT OF PHYSICS

CERTIFICATE OF APPROVAL

I hereby recommend that the dissertation report prepared under my supervision and guidance by “**LEEZA DUTTA**” entitled “**DIATOM AS EM WAVE ABSORBER**” be accepted for partial fulfilment of the requirements for the degree of Masters of Science in Physics.

A handwritten signature in blue ink that reads "Gitanjal Deka". The signature is written in a cursive style and is underlined.

Dr. Gitanjal Deka

Assistant professor

Department of Physics, RSAPS

Date: 04/08/2022

Place: Guwahati

A handwritten signature in blue ink that reads "Anusudha Devi". The signature is written in a cursive style.

Dean, RSAPS

The Assam Royal Global University



ROYAL SCHOOL OF APPLIED AND PURE SCIENCES

PROJECT REPORT

ON

“FORMATION AND TESTING OF A MALUS LAW POLARIMETER”

**Submitted in partial fulfillment of the requirement for the degree of
Master of Science**

In

**Department of Physics
Submitted by
BABOR ALI SHEIKH
Roll no:204012003**

Under the Supervision of

**Dr. Gitanjal Deka
Assistant Professor,**

**DEPARTMENT OF PHYSICS
ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI
AUGUST 2022**

Anuradha Devi

Dean, RSAPS
The Assam Royal Global University



ROYAL GLOBAL UNIVERSITY
GUWAHATI

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
DEPARTMENT OF PHYSICS

CERTIFICATE OF APPROVAL

I hereby recommend that the Project report prepared under my supervision by "BABOR ALI SHEIKH" titled "FORMATION AND TESTING OF A MALUS LAW POLARIMETER" be accepted in partial fulfillment of the requirements for the degree of Master of Science in Physics.

Date: 4/8/22

Place: Guwahati

Dr. Gitanjal Deka

Assistant Professor

Department of Physics

(RSAPS)

i

Dean, RSAPS

The Assam Royal Global University

A project work
On
Study of Earth's magnetic field with respect to solar magnetic disturbances

Submitted to



ROYAL GLOBAL UNIVERSITY
GUWAHATI

Department of Physics
Royal School of Applied and Pure Sciences
Royal Global University, Guwahati

For the partial fulfilment of the requirement for the degree of

Master of Science (M.Sc.)

Session 2021-2023

Submitted By

SUMAN BORAH

Registration no:-1211273

ROLL NO: 214012015

M.Sc. 4th semester

Department of Physics

Royal School of Applied and Pure Sciences

Under the supervision of

Dr. Bornali Chetia

Assistant professor (RSAPS), Department of Physics

Royal School of Applied and Pure Sciences

Royal Global University, Guwahati

Betkuchi NH-37, Guwahati- 781035

Anusudha Devi

Dean, RSAPS
The Assam Royal Global University



ROYAL GLOBAL UNIVERSITY
GUWAHATI

CERTIFICATE OF APPROVAL

This is to certify that the project entitled, “**Study of Earth’s magnetic field with respect to solar magnetic disturbances**”, carried out by SUMAN BORAH, a student of M.Sc. 4th semester bearing Roll no:214012015, Registration no:1211273, Department of Physics, Royal Global University, Guwahati has successfully completed his project under my supervision. I wish him success in life.

Date: 19.06.2023

Place: GUWAHATI

Bornali Chetia

(Dr. Bornali Chetia)

Asst. Professor (RSAPS)

Department of Physics

Royal Global University

Anumaha Devi
Dean, RSAPS
The Assam Royal Global University

PROJECT REPORT
On

**“TERAHERTZ PROPAGATION IN PLASMONIC WAVEGUIDE BASED
ON ONE DIMENSIONAL STEP PILLARS.”**

A report submitted in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE

Offered by
ROYAL SCHOOL OF APPLIED AND PURE SCIENCES

Under the supervision of:
Dr. MAIDUL ISLAM
ASSISTANT PROFESSOR

Submitted by:
IMDAD AHMED
REGISTRATION NO.: 1211264
ROLL NO.: 214012006
DEPARTMENT OF PHYSICS

ROYAL GLOBAL UNIVERSITY, GUWAHATI
JUNE, 2023

Anuradha Devi

Dean, RSAPS
The Assam Royal Global University

CERTIFICATE OF APPROVAL

I hereby recommend that the project report prepared under my supervision by **IMDAD AHMED** entitled "**Terahertz propagation in plasmonic waveguide based on one dimensional step pillars.**" be accepted in a partial fulfillment of the requirements for the degree of Master of Science.

Date: 19.08.23
Place: Guwahati

Maidul Islam

Dr. Maidul Islam
Assistant Professor
Department of Physics
RSAPS, RGU.

Anuradha Devi

Dean, RSAPS
The Assam Royal Global University

A study on the "Effect of Surface Texturing, Optical pathlength and spectral mismatch on the output of a solar cell"

A



ROYAL GLOBAL UNIVERSITY
GUWAHATI

For the partial fulfilment of the requirement for the degree of

Master of Science in Physics

Offered by

ROYAL SCHOOL OF APPLIED & PURE SCIENCES

Submitted by

MITALI DAS ROY

Roll No: 214012010

Registration No: 1211268

M.Sc. 4th Semester

DEPARTMENT OF PHYSICS RSAPS

Academic project guide:

Name: Dr. SANKAR BARMAN

Designation: Associate Prof. Department of Physics

Anusmaha Devi

Dean, RSAPS
The Assam Royal Global University

CERTIFICATE OF APPROVAL

I hereby certify that the Project entitled "Effect of Surface Texturing, Optical Pathlength and Spectral Mismatch on the output of a Solar Cell" has been prepared by Mitali Das Roy under my guidance and supervision, be accepted in partial fulfilment of the requirements for the degree of Master of Science in Physics.

Date: 19/6/23

Place: Guwahati



Dr. Sankar Barman
Associate Professor
Department of Physics
RSAPS

Anusudha Devi

Dean, RSAPS
The Assam Royal Global University



ROYAL GLOBAL UNIVERSITY
GUWAHATI

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
PROJECT REPORT
ON
“EFFECT OF SOLAR WIND PARAMETERS ON IONOSPHERIC
TOTAL ELECTRON CONTENT OVER MID LATITUDE STATION”

Submitted in partial fulfillment of the requirement for the degree of
MASTER OF SCIENCE
IN
DEPARTMENT OF PHYSICS

SUBMITTED BY

Bhaskar Jyoti Borah

Roll No:174012007

Under the supervision of

Dr. Bornali Chetia

Assistant professor , Department of physics.

DEPARTMENT OF PHYSICS
ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI

JUNE 2019

Anuradha Devi

Dean, RSAPS
The Assam Royal Global University

**ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI**



**ROYAL GLOBAL UNIVERSITY
GUWAHATI**

DEPARTMENT OF PHYSICS

CERTIFICATE OF APPROVAL

I hereby recommend that the Project report prepared under my supervision and guidance by “**Bhaskar Jyoti Borah**” titled “**EFFECT OF SOLAR WIND PARAMETERS ON IONOSPHERIC TOTAL ELECTRON CONTENT OVER MID LATITUDE STATION**” be accepted in partial fulfillment of the requirements for the degree of Master of Science in Physics.

Date: 24.06.2019

Place: Guwahati

Dr. Bornali Chetia

Assistant Professor

Department of Physics

(RSAPS)

Anuradha Devi
Dean, RSAPS

The Assam Royal Global University



ROYAL GLOBAL UNIVERSITY
GUWAHATI

**ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
PROJECT REPORT**

ON

A STUDY OF THE ORIGIN OF COSMIC SINGULARITY

Submitted in partial fulfilment of the requirement for the degree of

**MASTER OF SCIENCE
IN
DEPARTMENT OF PHYSICS**

SUBMITTED BY

**Bishal Das
Roll No: 174012011**

Under the supervision of

**Dr. Bornali Chetia
Assistant Professor, Department of Physics
RSAPS**

**DEPARTMENT OF PHYSICS
ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI**

June 2019

Anusudha Das

Dean, RSAPS
The Assam Royal Global University

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI



ROYAL GLOBAL UNIVERSITY
GUWAHATI

DEPARTMENT OF PHYSICS

CERTIFICATE OF APPROVAL

I hereby recommend that the project report prepared under my supervision by “**Bishal Das**” titled “**A Study of the origin of Cosmic Singularity**” be accepted in partial fulfilment of the requirements for the degree of Master of Science in Physics.

Date: 24-06-19

Place: Guwahati-35

Anuradha Devi
Dean, RSAPS
The Assam Royal Global University

Bornali Chetia
Dr. Bornali Chetia
Assistant Professor
Department of Physics
RSAPS, RGU



ROYAL GLOBAL UNIVERSITY
GUWAHATI

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
PROJECT REPORT

ON

“STUDY OF OPTICAL RETARDANCE ABILITY OF PLASTIC MATERIAL BY USING
POLARIZED LIGHT”

Submitted in partial fulfillment of the requirement for the degree of
MASTER OF SCIENCE

IN

DEPARTMENT OF PHYSICS

SUBMITTED BY

Chinmoy kr. Barman

Roll no: 174012012

Under the Supervision of

Dr. Gitanjal Deka

Assistant Professor, Department of Physics

DEPARTMENT OF PHYSICS

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES

ROYAL GLOBAL UNIVERSITY, GUWAHATI

JUNE 2019

...
Anusadha Devi
Dean, RSAPS
The Assam Royal Global University



ROYAL GLOBAL UNIVERSITY
GUWAHATI

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI

DEPARTMENT OF PHYSICS

CERTIFICATE OF SUBMISSION

I hereby recommend that the Project report prepared under my supervision by "Chinmoy kr. Barman" titled "STUDY OF OPTICAL RETARDANCE ABILITY OF PLASTIC MATERIAL BY USING OF POLARIZED LIGHT" be accepted in partial fulfillment of the requirements for the degree of Master of Science in Physics.

Date: 25.6.19

Place: Guwahati

Devika Phukan

Dr. Devika Phukan

Associate professor

HOD Department of Physics

(RSAPS)

Anumaha Devi

Dean, RSAPS

The Assam Royal Global University



ROYAL GLOBAL UNIVERSITY
GUWAHATI

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
PROJECT REPORT
ON

“AN INVESTIGATION OF THE ABSORPTION OF He-Ne LASER (2mW OUTPUT
POWER) IN FEW EDIBLE DRINKS IMPARTED WITH SILVER NANO
PARTICLES”

Submitted in partial fulfillment of the requirement for the degree of

MASTER OF SCIENCE
IN
DEPARTMENT OF PHYSICS

SUBMITTED BY

Ashish Mishra
Roll No: 174012006

Under the Supervision of

Dr. Devika Phukan
Associate Professor and HOD Department of Physics,
Deputy Dean, RSAPS

DEPARTMENT OF PHYSICS
ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI
JUNE 2019

Anusmaha Devi
Dean, RSAPS
The Assam Royal Global University

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI



ROYAL GLOBAL UNIVERSITY
GUWAHATI

DEPARTMENT OF PHYSICS

CERTIFICATE OF SUBMISSION

I hereby recommend that the Project report prepared under my supervision and guidance by Ashish Mishra titled "AN INVESTIGATION OF THE ABSORPTION OF He-Ne LASER (2mW OUTPUT POWER) IN FEW EDIBLE DRINKS IMPARTED WITH SILVER NANO PARTICLES" be accepted in partial fulfillment of the requirements for the degree of Master of Science in Physics.

Date: 24.6.19

Place: Guwahati

Devika Phukan

Dr. Devika Phukan

Associate professor

HOD Department of Physics

Deputy Dean (RSAPS)

Anusudha Devi

Dean, RSAPS

The Assam Royal Global University

A study on
“Tuning of resonance based on metamaterial structures”

A Report submitted in partial fulfilment of the requirements for the
degree of

Master of Science in Physics

Offered by

Royal School of Applied and Pure Sciences

Submitted by:

Name: Khalida Ahmed

Registration No.: 1190903

Roll No.: 194012014

Academic project guide:

Name: Dr. Maidul Islam

Designation:

Assistant Professor

Department of Physics

RSAPS

**ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
THE ASSAM ROYAL GLOBAL UNIVERSITY, GUWAHATI
August, 2021**

Anuradha Devi

Dean, RSAPS
The Assam Royal Global University

**ROYAL SCHOOL OF APPLIED AND PURE SCIENCES
ROYAL GLOBAL UNIVERSITY, GUWAHATI**

DEPARTMENT OF PHYSICS

CERTIFICATE OF APPROVAL

I hereby certify that the project entitled "Tuning of resonance based on metamaterial structures" has been prepared by Khalida Ahmed under my guidance and supervision, in partial fulfillment of the requirement for the degree of Master of Science in Physics.

Date: August 28, 2021
Place: GUWAHATI

Maidul Islam
Dr. Maidul Islam
Assistant Professor
Department of Physics
RSAPS

Anuradha Devi
Dean, RSAPS
The Assam Royal Global University

A study on

**“ANALYSIS OF CURRENT-VOLTAGE CHARACTERISTIC OF
ALKALINE ELECTROLYSIS SYSTEM USING COMSOL
MULTIPLYRICS SOFTWARE”**

A Report submitted in partial fulfilment of the requirement for the degree
of

Master of Science in physics

Offered by

Royal School of Applied and Pure Sciences

Submitted By:

Name: Rohan Baruah

Registration No.: 1190913

Roll No.: 194012024

DEPARTMENT OF PHYSICS

RSAPS

Under the supervision of

Dr. Shankar Barman

Assistant Professor

Department of Physics

RSAPS

DEPARTMENT OF PHYSICS

ROYAL SCHOOL OF APPLIED & PURE SCIENCES

THE ASSAM ROYAL GLOBAL UNIVERSITY, GUWAHATI

August 2021

Anusudha Devi

Dean, RSAPS
The Assam Royal Global University

CERTIFICATE OF SUBMISSION

This is to certify that the graduate seminar report entitled “ANALYSIS OF CURRENT-VOLTAGE CHARACTERISTIC OF ALKALINE ELECTROLYSIS SYSTEM USING COMSOL MULTIPLYRICS SOFTWARE” submitted by Rohan Baruah, Roll No. 194012024, The Assam Royal Global University, Guwahati in partial fulfilment of the award of the degree of Masters of Science in Physics is a bona fide record of project work carried out by him under my supervision and guidance.

The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Place: Guwahati

Date: 27/08/2021



Dr. Sujata Deb

Assistant Professor

HOD, Department of Physics

Royal School of Applied & Pure Sciences

The Assam Royal Global University

Guwahati – 781014.

Anusudhe Deb

Dean, RSAPS

The Assam Royal Global University

A study on the
**CHANGE OF IONOSPHERIC PARAMETERS
DURING SOLAR EVENTS**

**A Report submitted in partial fulfilment of the requirements
for the degree of Master of Science**

Offered by

**ROYAL SCHOOL OF APPLIED AND PURE
SCIENCES**

Submitted by:

Name: BhargavChetia

Registration No.: 1190893

Roll No.: 194012004

Academic project guide:

Name: Dr.BornaliChetia

Designation: Assistant Professor

Anusudha Devi

Dean, RSAPS
The Assam Royal Global University