



**TILTED BINACHI TYPE-I COSMOLOGICAL  
MODELS WITH PERFECT FLUID**

**A Project Report Submitted in partial fulfillment for the Degree of  
M. Sc., Mathematics**

**By**

**ANJALI BEHERA**

**Exam Roll No. : 24MATH0014**

**Class Roll No. : MATH24-007**

**Semester-IV**

**Under the guidance of**

**SRI SURAJ KUMAR GARADA**

**Asst. Professor of Mathematics**

**POST-GRADUATE DEPARTMENT OF MATHEMATICS**

**Govt. Science College, Chatrapur**

**Ganjam, odisha-716020**

**Session: 2024-26**

# DECLARATION

I hereby declare that the project work on "**Tilted Bianchi Type -I Cosmological Models with Perfect fluid**" has been taken by me under the guidance of **Sri. Suraj Kumar Garada**, Assistant Professor, Dept. of Mathematics, Govt. Science College, Chatarpur, Ganjam for partial fulfilment of the requirement for the PG 4<sup>th</sup> semester examination for the academic session 2024-2026 .

*Anjali Behera*  
Signature of the Student

**GOVERNMENT SCIENCE COLLEGE, CHATRAPUR**



**SPECTRUM AND CAYLEY TRANSFORM OF  
OPERATORS**

**Dissertation report submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Mathematics**

By  
**Baishnabi Behera**  
(Roll No:24MATH0015)

Under the guidance of  
**Dr. Badal Sahoo**  
Assistant Professor Department of Mathematics  
Government Science College, Chatrapur,  
Odisha 761020, India

### DECLARATION

I, Baishnabi Behera, hereby declare that the work "**Spectrum and Cayley transform of operators**" submitted by me to Government Science College, Chatrapur for the award of degree of M. Sc., has not been submitted previously in this college or in any other college for the degree of M.Sc.

*Baishnabi Behera*  
Signature of the Student

**BERHAMPUR UNIVERSITY**



**PHYSICAL AND GEOMETRICAL SIGNIFICANCES  
OF TILTED BIANCHI COSMOLOGICAL MODEL**

**A Project Report Submitted in partial fulfillment for the Degree of  
M. Sc. Mathematics**

**By**

**G. JYOTISMITA DORA**

**Exam Roll No. : 24MATH0019**

**Class Roll No. : MATH24-011**

**Semester-IV**

**Under the guidance of**

**DR. AJIT KUMAR SETHI**

**Asst. Professor of Mathematics**

**POST-GRADUATE DEPARTMENT OF MATHEMATICS  
Govt. Science College, Chatrapur  
Ganjam, odisha-761020**

**Session: 2024-26**

# DECLARATION

I hereby declare that the project work on "**Tilted Bianchi Type -I Cosmological Models with Perfect fluid**" has been taken by me under the guidance of **Dr. Ajit Kumar Sethi**, Assistant Professor, Dept. of Mathematics, Govt. Science College, Chatarpur, Ganjam for partial fulfilment of the requirement for the PG 4<sup>th</sup> semester examination for the academic session 2024-2026 .

G. Jyotismita Dora

Signature of the Student

BERHAMPURUNIVERSITY



**Government Science College**  
Chhatrapur, Ganjam, Odisha

Project submitted in partial fulfillment for the degree of

**Master of Science**  
**in**

**Mathematics**

Submitted by

**JHARANA RANI SAHU**

Exam Roll No:24MATH0021

Class Roll No: MATH-24-022

**A PROJECT ON**

**PHYSICAL AND GEOMETRICAL FEATURE**

**OF A BIANCHI TYPE-111 COSMOLOGICAL MODEL**

Under the guidance of

**Dr. Ajit Kumar Sethi**  
**Assistant Professor of Mathematics**

POST GRADUATE DEPARTMENT OF MATHEMATICS

GOVERNMENT SCIENCE COLLEGE, CHATRAPUR

GANJAM, ODISHA-761026

2024-2026

## DECLARATION

I, Jharana Rani Sahu, hereby declare that the project on "**Physical and Geometrical Feature of a Bianchi Type-111 Cosmological Model**" has been taken by me under the supervision of **Dr. Ajit Kumar Sethi**, Assistant Professor, Dept of Mathematics, Govt. Science College, Chatrapur, Ganjam in order to partial fulfillment of the requirement of the **PG 4<sup>th</sup>** semester examination for the academic session 2024-2026.

Jharana Rani Sahu

**Signature of the Student**

**GOVERNMENT SCIENCE COLLEGE, CHATRAPUR**



# **ORTHONORMAL SETS AND ITS APPLICATIONS**

**Dissertation report submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Mathematics**

By  
**Shivani Sahu**  
(Roll No:24MATH0024)

Under the guidance of  
**Dr. Badal Sahoo**  
Assistant Professor Department of Mathematics  
Government Science College, Chatrapur,  
Odisha 761020, India.

### DECLARATION

I, Shivani Sahu , hereby declare that the work "**Orthonormal sets and its applications**" submitted by me to Government Science College, Chatrapur for the award of degree of M. Sc., has not been submitted previously in this college or in any other college for the degree of M.Sc.

*Shivani Sahu*

**Signature of the Student**

**GOVERNMENT SCIENCE COLLEGE, CHATRAPUR**



# **ORTHONORMAL SETS AND ITS APPLICATIONS**

**Dissertation report submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Mathematics**

By  
**Soubhagya Manjari Sahoo**  
(Roll No:24MATH0025)

Under the guidance of  
**Dr. Badal Sahoo**  
Assistant Professor Department of Mathematics  
Government Science College, Chatrapur,  
Odisha 761020, India.

## DECLARATION

I, Soubhagya Manajari Sahoo, hereby declare that the work "**Orthonormal sets and its applications**" submitted by me to Government Science College, Chatrapur for the award of degree of M. Sc., has not been submitted previously in this college or in any other college for the degree of M.Sc.

*Soubhagya manjari Sahoo*  
**Signature of the Student**

**BERHAMPUR UNIVERSITY**



**DYNAMICS OF TILTED BIANCHI TYPE - I COSMO-  
LOGICAL MODELS WITH PERFECT FLUID**

**A Project Report Submitted in partial fulfillment for the Degree of  
M. Sc. Mathematics**

**By**

**SWAGATIKA PRADHAN**

**Exam Roll No. : 24MATH0026**

**Class Roll No.: MATH24-016**

**Semester - IV**

**Under the guidance of**

**DR. AJIT KUMAR SETHI**

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**Govt. Science College, Chatrapur**

**Ganjam, odisha-761020**

**Session: 2024-26**

# DECLARATION

I hereby declare that the project work on "Tilted Bianchi Type -I Cosmological Models with Perfect fluid" has been taken by me under the guidance of Dr. Ajit Kumar Sethi, Assistant Professor, Dept. of Mathematics, Govt. Science College, Chatarpur, Ganjam for partial fulfillment of the requirement for the PG4<sup>th</sup> semester examination for the academic session 2024-2026.

*Swagatika Pradhan*  
Signature of the Student

# BERHAMPUR UNIVERSITY



**Government Science College**  
**Chhatrapur, Ganjam, Odisha**

Project submitted in partial fulfillment for the degree of

**Master of Science**  
**in**

**Mathematics**

Submitted by

**TIKINA BEHERA**

Exam Roll No:24MATH0027

Class Roll No:MATH-24-009

**A PROJECT ON**

**COSMOLOGICAL PARAMETERS**

**AND SOLUTION OF STANDARD EINSTEIN EQUATION**

Under the guidance of

**Dr. Ajit Kumar Sethi**

**Assistant Professor of Mathematics**

POST GRADUATE DEPARTMENT OF MATHEMATICS

GOVERNMENT SCIENCE COLLEGE, CHATRAPUR

GANJAM, ODISHA-761026

2024-2026

## DECLARATION

I, Tikina Behera, hereby declare that the project on "**Effect of Dark Energy on Cosmological Parameter with solution on standard Einstein Field equation**" has been taken by me under the supervision of **Dr. Ajit Kumar Sethi**, Assistant Professor, Dept of Mathematics, Govt. Science College, Chatrapur, Ganjam in order to partial fulfillment of the requirement of the **PG 4<sup>th</sup>** semester examination for the academic session 2024-2026.

  
Signature of the Student

**GOVERNMENT SCIENCE COLLEGE, CHATRAPUR**



**SPECTRUM AND CAYLEY TRANSFORM OF  
OPERATORS**

**Dissertation report submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Mathematics**

By  
**Biplab Ranjan Gajendra**  
(Roll No:24MATH0093)

Under the guidance of  
**Dr. Badal Sahoo**  
Assistant Professor Department of Mathematics  
Government Science College, Chatrapur,  
Odisha 761020, India.

### DECLARATION

I, Biplab Ranjan Gajendra, hereby declare that the work "**Spectrum and Cayley transform of operators**" submitted by me to Government Science College, Chatrapur for the award of degree of M. Sc., has not been submitted previously in this college or in any other college for the degree of M.Sc.

Biplab Ranjan Gajendra

**Signature of the Student**