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HENRY BAKER COLLEGE MELUKAVU

DEPARTMENT OF PHYSICS

ACADEMIC
YEAR

2023-24

FROM DARKNESS INTO MARVELLOUS LIGHT

Henry Baker College, Melukavu, a Christian, Minority, Co-Educational, Government- aided Arts and Science College Established In 1981, affiliated to Mahatma Gandhi University, Kottayam, Kerala, Accredited by NAAC with 'A' Grade and An ISO 9001:2015 certified Institution.

DEPARTMENT OF PHYSICS
HENRY BAKER COLLEGE, MELUKAVU
Annual Report 2023-24

Introduction:

Department of Physics at Henry Baker College, Melukavu endeavors to cultivate a strong foundation in theoretical and experimental physics among its students by training the young minds to think. The department offers undergraduate programme in Physics following the curriculum of B.Sc. Physics (Model I) Core programme of Mahatma Gandhi University, Kottayam. Chemistry and Mathematics are the complementary courses. In addition to rigorous academic programs and practical laboratory sessions, the department offers a range of activities aiming at overall development of its students. This report is a summary of the activities of the Department of Physics during the academic year 2023-24.

Certificate courses:

The department offered a certificate course in 'Certificate Course in Logical Reasoning' during the academic year 2023-24. The main objective of this course was to impart in students an understanding of logical reasoning that will help them to excel in competitive exams. A total of 19 students from various departments enrolled and successfully completed this course. By undertaking this certificate course, the students learn certain reasoning skills that helps to ace competitive exams.

Results- 2023-24:

The department obtained 40% pass percentage during the academic year 2023-2024 with Darsana Sanoj securing the highest score.

Physics Association Programmes:

1. Celebrating India's Journey to the Moon: Historic Launch of Chandrayaan 3

Department of Physics, Henry Baker College, Melukavu, organized a livestream event on 14 July 2023 in order to celebrate and witness the historic launch of Chandrayaan 3, India's third lunar mission. Chandrayaan 3 was a significant milestone in India's space exploration efforts which demonstrated India's commitment to advancing its space technology capabilities and contributing to the understanding about the Moon. The event was entitled “Celebrating India's Journey to the Moon: Historic Launch of Chandrayaan 3”. This event aimed to educate and inspire students, faculty, and the community about India's contributions to space science and technology. The livestream setup was arranged in the college seminar hall equipped with large high-definition screens and advanced sound systems for the best viewing experience. The event was a grand success, with the participation of as much as 58 people, including faculty and students from various departments. The event was able to foster a sense of curiosity and enthusiasm for space science among the audience.





2. Public Science Talk

Topic: The Indian Lunar Voyage- A journey through time and beyond

Resource Person: Mr. Anurag S. of AASTRO Kerala Kottayam Chapter

The Department of Physics, Henry Baker College, Melukavu, celebrated the International Moon Day 2023 by organizing a public science talk and students' interactive session in collaboration with AASTRO Kerala Kottayam Chapter. The event was conducted on 24th July 2023 at 2.30 P.M. The programme was aimed to promote scientific temper among the students and create awareness among the public regarding India's space odyssey. The talk was led by Mr. Anurag S. of AASTRO Kerala Kottayam Chapter. The lecture reflected upon the significance of space and lunar exploration and India's extraordinary technological advancements in space exploration, with special focus on the renowned Chandrayaan missions. The event was a grand success with the participation of 51 members including students and faculty from the college as well as from the nearby schools (Government Higher Secondary School, Muttom). Following the lecture, the students and faculty engaged in a lively discussion with the speaker addressing their curiosities and expanding their understanding of space exploration. The lecture and discussions offered a

unique opportunity to the participants to gain profound insights into the accomplishments and aspirations of India's renowned space programs. The programme was well received and participants expressed their appreciation for the informative and inspiring session.



**DEPARTMENT OF PHYSICS
HENRY BAKER COLLEGE
MELUKAVU, KOTTAYAM**
In collaboration with
AASTRO KERALA KOTTAYAM DISTRICT CHAPTER

**PUBLIC SCIENCE TALK & STUDENTS
INTERACTIVE SESSION**

THE INDIAN LUNAR VOYAGE

A JOURNEY THROUGH TIME AND BEYOND

SPEAKER
ANURAG S
GOVT. ENGINEERING COLLEGE, IDUKKI

DATE: 24TH JULY 2023 (MONDAY)
TIME: 2.30 PM
VENUE: SEMINAR HALL,
HENRY BAKER COLLEGE,
MELUKAVU, KOTTAYAM



**DEPARTMENT OF PHYSICS
HENRY BAKER COLLEGE, MELUKAVU, KOTTAYAM**
In collaboration with **AASTRO Kerala**

is commemorating the anniversary of the first Moon landing and delving into India's remarkable Chandrayaan programs.

In honor of the historic first Moon landing and the highly anticipated launch of Chandrayaan-3, we are delighted to present a captivating talk followed by an interactive session by esteemed speaker of AASTRO Kerala, Mr. Anurag S of Govt. Engineering College, Idukki.

THE INDIAN LUNAR VOYAGE

A JOURNEY THROUGH TIME AND BEYOND
24th July 2023 Monday, 2.30 PM
Venue: Seminar Hall, Henry Baker College, Melukavu, Kottayam

Prepare to embark on a fascinating journey through India's extraordinary technological advancements in space exploration, with a special focus on the renowned Chandrayaan programs. This lecture and discussions offer a unique opportunity to reflect on the significance of space and lunar exploration while gaining profound insights into the accomplishments and aspirations of India's renowned space program. Whether you are an avid space enthusiast or simply intrigued by India's impressive technological advancements, this program promises to be an enlightening and inspiring experience.

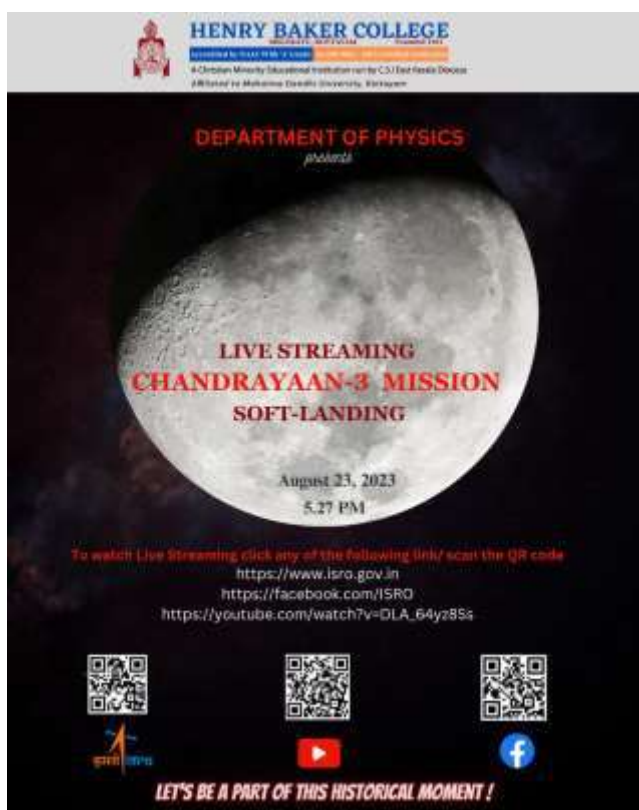
We cordially invite you to be part of this exceptional event! Join us as we celebrate and explore India's Chandrayaan programs, and be captivated by the captivating future of space exploration.

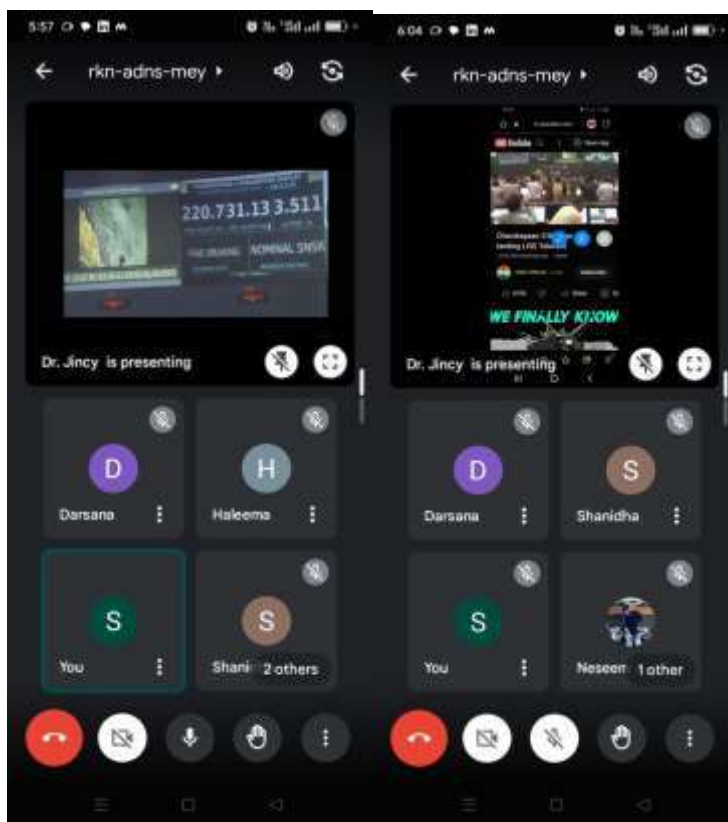
DR. SURESH KUMAR S.S. PRINCIPAL
DR. JACEY BENJESSA, HOD IN PHYSICS, PHYSICS
DR. SHARMA RAJAN RAJENDRAN, ASSISTANT PROFESSOR
MR. KETTER GEORGE, ASSISTANT PROFESSOR (COMPUTER)
MR. ABRAHAM J. ASSISTANT PROFESSOR (PHYSICS)
DR. P. J. ASSISTANT CO-ORDINATOR, AASTRO KERALA KOTTAYAM
FOR MORE DETAILS, CONTACT: +91 98461 71000



3. Livestreaming Chandrayaan 3 Mission Soft-landing

Department of Physics, Henry Baker College, Melukavu, organized a virtual event on 23 August 2023 in order to witness the touchdown of Chandrayaan 3, India's third and historic lunar mission, on lunar soil. Chandrayaan 3 was a significant milestone in India's space exploration efforts which demonstrated India's commitment to advancing its space technology capabilities and contributing to the understanding about the Moon. The live stream was facilitated via google meet under the auspices of Dr. Jincy Devasia, HOD and faculty, Department of Physics. In an effort to foster a wider audience, students of other departments were encouraged to watch the event online via the YouTube link for the live stream event. The event was executed successfully, with the participation of all faculty and students of the Department of Physics in the google meet platform. The event was aimed to inspire and motivate youngsters in India's space technology and could achieve this objective to the best possible extent.





4. National Science Day Celebrations 2024

Programme Title: Workshop on basics of Machine Learning

Resource Person: Dr. Sneha Susan Mathew

National Science Day is celebrated in India on February 28th every year to commemorate the discovery of Raman Effect by Sir. C. V. Raman. This day is aimed at spreading awareness about the importance of science and its applications in our day to -day life. This year's theme is "Indigenous technologies for Vikasit Bharat". As part of National Science Day Celebrations 2024, the Department of Physics in association with Institution Innovation Council conducted a hands-on workshop on basics of Machine Learning on 28/02/2024, 12 PM at HBC Computer Lab. The workshop was led by Dr. Sneha Susan Mathew, Assistant Professor, Department of Physics, Henry Baker College. The workshop aimed to introduce participants to fundamental concepts and applications of machine learning, which is a thriving domain with diverse real-world applications. The students gained a basic level understanding of machine learning techniques by providing hands-on experience for training machine learning systems and building things with them. It provided the attendees with an insight in

training machine learning models to recognize text, numbers, images, or sounds. The workshop likely served as a valuable learning experience for all those who participated, helping to foster interest in students to this important area of science and technology. The students and teachers of the Department actively participated in the event.



5. Project Demonstration

The Department of Physics in association with Institution Innovation Council organized Project Demonstration of final year BSc Physics students on 18/03/2024 from 3 PM – 4 PM at Physics

Lab, Henry Baker College, Melukavu. The aim is to enhance their academic experience and hence developing scientific curiosity. Moreover, it also helps to increase the technical proficiency with laboratory equipment's and communication skills through presenting their findings. Following projects were demonstrated.

- 1) DC to AC Converter – Ashkar Noorudhin and Nessem V. S.
- 2) Clipping circuits using Zener diode – Darsana Sanoj
- 3) Comparative study of young's modulus of different types of woods – Sumayya P. N. and Haleema Beevi K M

The final year students explained the working principle and demonstrated the work. The students and staff of the Department participated in the programme.





5. Achievements

(a) Best Outgoing Student 2021-2022 Award:

Adikiran Johny of III BSc Physics bagged the cash award instituted by Department of Physics for the Best Outgoing Student 2022-23.

(b) Class Topper Award:

Adikiran Johny of III BSc Physics bagged the cash award instituted by Henry Baker College for becoming Class Topper with A+ grade in Mahatma Gandhi University Examinations held in March/April 2023.

(c) Photography Contest:

Ashkar Noorudhin, III BSc Physics secured second prize in the Mobile Photography Contest organized by Department of Tourism, Henry Baker College Melukavu, on 2nd February, 2024

(d) Quiz Programs:

I. Ms. Darsana Sanoj of III BSc Physics bagged Second Place in Tourism Quiz organized by Tourism Department of Henry Baker College, Melukavu as part of 'World Tourism Day' on 29th September 2023.

II. Ms. Darsana Sanoj and Ms. Sumayya P. N. of III BSc Physics secured Third position in the inter-departmental Quiz contest organized by Women Cell Avnika of Henry Baker College, Melukavu in association with KSWDC as part of 'International Women's Day celebrations' on 08th March 2024.

(e) Sports Day

Ms. Risana P. A., Assistant Professor on Contract, Department of Mathematics bagged First Prize in Badminton Singles conducted by Department of Physical Education of Henry Baker College, Melukavu during the academic year 2023-24

6. Seminars/Conference Presentations:

1. Dr. Sneha Susan Mathew - Invited Talk on "Seamless Boundaries of Physics", June 20, 2023 at St. Joseph's College, Moolamattom
2. Resource Person for Workshop on Machine learning, National Science Day 2024 celebration at Henry Baker College, Melukavu

7. Research Publications:

1. Akhil Gopalakrishnan, **Disha V. Janardhanan**, Subha Sasi, Charuvila T. Aravind Kumar , Usha K. Aravind * 2024 Title: Organic micropollutant removal and phosphate recovery by polyelectrolyte multilayer membranes: Impact of buildup interactions. *Chemosphere* 350 (2024) 141078, DOI: <https://doi.org/10.1016/j.chemosphere.2023.141078>
2. U. Anjana, **S.S. Mathew** and Kumar, K.K., Retrieval of the Hadley circulation boundaries at regional scales using global positioning system-radio occultation measurements. *GPS Solutions* 28, 22 (**2024**), DOI: <https://doi.org/10.1007/s10291-023-01561-y>

8. Participation in Faculty Development Programmes

1. Dr. Disha V J participated in one week Faculty Development Programme on ‘Implementation of NEP-2020 for University and College Teachers’ held from 12- 20 June, 2023(UGC– Approved Short-Term Professional Development Programme)
2. Dr. Sneha Susan Mathew participated in one week Faculty Development Programme on ‘Education 4.0’ from 31 July -06 August 2023 (One week FDP, Ministry of Edn)

9. Conclusion:

The Department of Physics at Henry Baker College Melukavu is committed to providing a nurturing environment for the study of physics and promoting scientific awareness among both students of our college and also to public. Through association programmes, student support activities, outreach activities, and research initiatives, the department continues to empower our students, equip them with the necessary skills and knowledge, for future academic and professional endeavors and thereby contribute to society in a successful manner.