

# *BEATS*

**Physics Association Report**

**2019-2020**



**Department of Physics**

**Baselius College**

**Kottayam**

***CERTIFICATE***

*This is to certify that the details furnished in this report of the activities of Physics Association is an authentic description of the events held in the academic Year 2019- 2020*

*Dr. Sindu Jones  
Head of the Department  
Department of Physics*

*Dr. Anisha Mary Mathew  
Teacher in charge  
Physics Association*

## Office Bearers

President

Dr. Biju Thomas  
Principal

Vice President

Dr. Sindu Jones

Teacher in Charge

Dr. Anisha Mary Mathew

General Secretary

Lakshmi K B & Aiswarya Ambadi

Joint Secretary

Mr. Albin Sabu

Documentation Officer

Ann Jacob

## **Acknowledgement**

The association activities would not have been possible without the constant support and help of many individuals and the institution. I would like to extend my sincere thanks to all of them.

I am highly indebted to our Principal Dr. Biju Thomas for his guidance and constant support in the association activities.

Sincere thanks to Dr. Sindu Jones, HOD, Department of Physics and Ms. Neha P R for their constant support and timely help for the completion of one-year activities.

My thanks and appreciations also go to my colleagues for the timely and valuable help. I also thank all the students of the Physics department for the smooth conduct of the association activities.

Last but not the least I thank the Lord almighty for showering his grace in conducting the association programmes with success.

**Dr. Anisha Mary Mathew**  
**Teacher in Charge**  
**Physics Association**

## **EVENTS**

- 1. ENVIRONMENTAL DAY CELEBRATION**
- 2. POSTER DESIGNING COMPETITION**
- 3. POSTER EXHIBITION**
- 4. PRESENTATION ON CHANDRAYAAN 2**
- 5. CAREER GUIDANCE CLASS**
- 6. ASSOCIATION INAUGURATION, PROF.SUSAN JOHN  
MEMORIAL ALL KERALA QUIZ AND PROF.V JOHN MEMORIAL  
ALL KERALA POWER POINT PRESENTATION COMPETITIONS**
- 7. SEMINAR ON “INVISIBILITY: SCIENCE AND TECHNOLOGY-  
PRESENT SCENARIO”**
- 8. STUDY TOUR FOR FINAL YEAR UG STUDENTS**
- 9. INAUGURATION OF ONE YEAR SILVER JUBILEE  
PROGRAMMES**
- 10.CALLISTO 2020 (PHYSICS FEST)**
- 11. NATIONAL SCIENCE DAY CELEBRATION**
- 12. INDUSTRIAL VISIT**

## **PHYSICS ASSOCIATION (BEATS)**

With immense pleasure and gratitude, we are presenting a brief report of the activities of the Physics Association Beats during the year 2019- 2020

The activities of the association for the current year was organized under the guidance and support of the Head of the Department (HOD), Dr.Sindu Jones with Lakshmi K.B and Aiswarya Ambady as the Association Secretaries, Mr. Albin Sabu as the Joint Secretary, Ann Jacob and Navya Anna Rajan as the documentation officers, Deepa Mary Raju and Sneha Roy as treasurers and elected representative from various classes under the department along with Dr Anisha Mary Mathew (teacher in charge), and Ms. Neha P R (Deputy teacher in charge).

### **ENVIRONMENTAL DAY CELEBRATION**

The Physics Association activities started its long triumphant journey on June 20<sup>th</sup> 2019 with the “Environmental day celebration”. As a part of environmental day celebration, an awareness program was conducted for the students of Government UP School, Ericode on 20th June, 2019. The program was organized for the students of classes 5, 6 and 7. The children were active and interactive throughout the entire session. The teachers of the school were also supportive. The program started off with a presentation on the harmful effects of environmental pollution. It was conducted by Aiswarya Ambady and Varghese Reji of D3 Physics. The presentation was animated and interesting for the children.

Lakshmi K B and Blessy of D3 Physics demonstrated how to make paper bags and paper pens. The students from the school were also come forward to make pens and paper bags. It was a new experience for them. It proved effective as this taught the importance of recycling. After this segment, the students of D3 Physics enacted a skit based on pollution and protecting the environment. The children were happy and

influenced by the program. It ended by gifting a plant to the headmistress of the Government UP School, Ericadu. This was an amazing moment shared by the students of Government UP School and D3 Physics that set the stage for what was a spectacular academic year for the Physics Department.



## **POSTER DESIGNING COMPETITION**

**(ANTI DRUGS DAY)- 14/07/2019**

A poster designing competition was organized on behalf of the Anti-Drug Day on 14th July, 2019. It was an inter-department competition. Teams of two students were invited. The topic was given on the spot. Competition started at 2:30 pm and all the students participated actively. Charts were provided while the students were asked to bring drawing materials. It was a creative and interactive environment. There were many well-crafted posters. Roshan Daniel and Praphul Vijayan of English Department bagged the first position. Second position was won by Muhammed Sirajudheen K B and Sreeja Raj of Economics Department. It was decided that the posters would be kept for viewing on another day at the A.P Mani Corridor. Winners were awarded certificates and mementos.

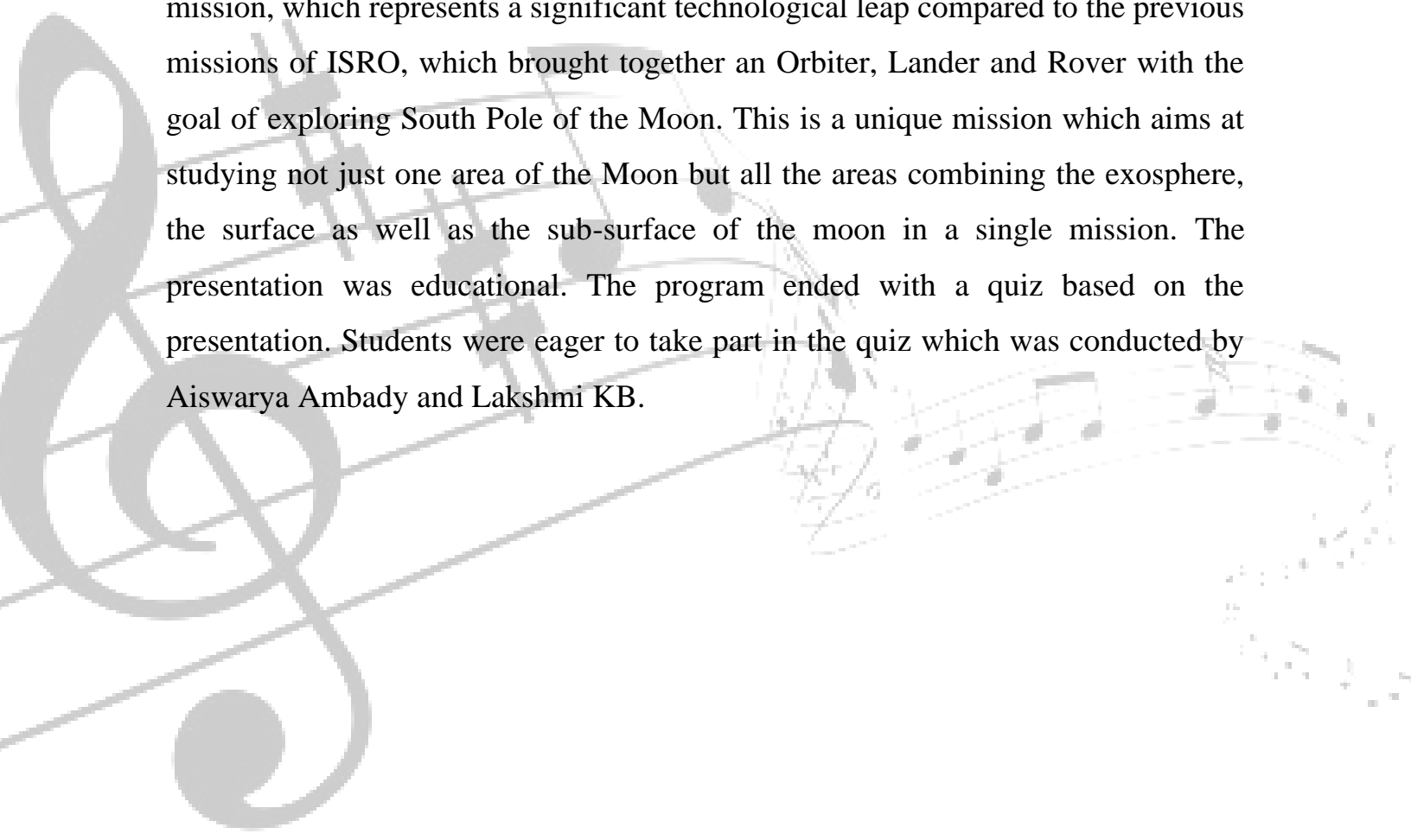


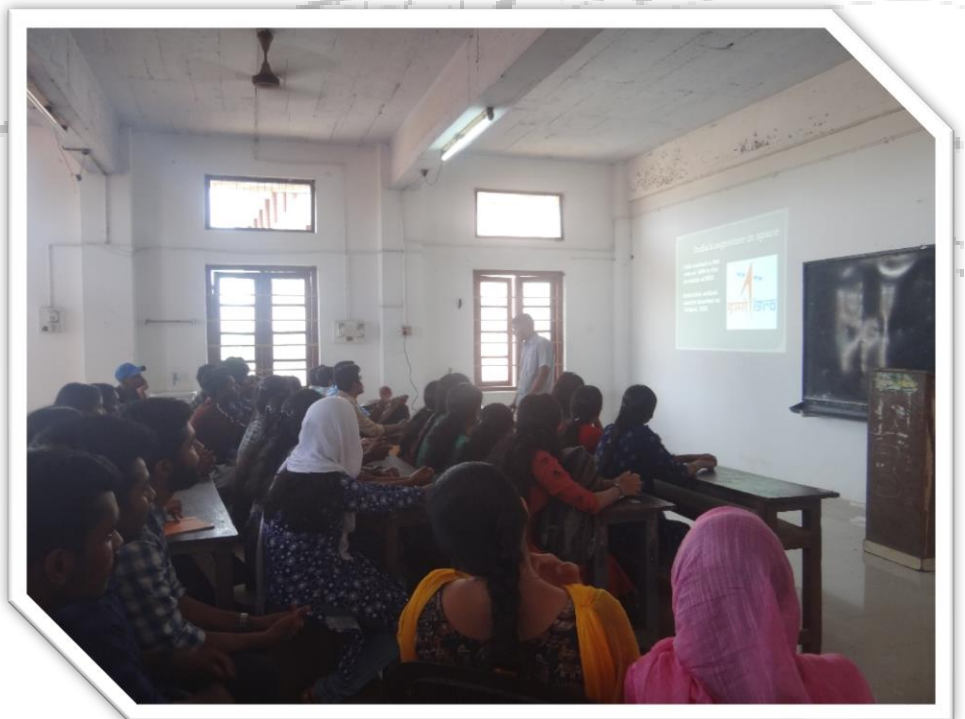
These posters were exhibited at A P Mani Corridor on 16-07-2019 which received the attention of both students and teachers.



## **PRESENTATION ON CHANDRAYAAN 2-16 -07-2019**

Chandrayaan-2 was decided to launch on 15th July, 2019 at 2:30 am. But the launch was postponed due to technical issues. A presentation on the Chandrayaan 2 was conducted in the Department of Physics by Varghese Reji of D3 physics. He provided details on Chandrayaan 1 and Chandrayaan 2. Information on the launch vehicle and payloads were provided. Chandrayaan-2 mission is a highly complex mission, which represents a significant technological leap compared to the previous missions of ISRO, which brought together an Orbiter, Lander and Rover with the goal of exploring South Pole of the Moon. This is a unique mission which aims at studying not just one area of the Moon but all the areas combining the exosphere, the surface as well as the sub-surface of the moon in a single mission. The presentation was educational. The program ended with a quiz based on the presentation. Students were eager to take part in the quiz which was conducted by Aiswarya Ambady and Lakshmi KB.





## **CAREER GUIDANCE CLASS on 19-07-2019**

Department of Physics conducted a career guidance class for the D3 students and M.Sc. first year students on 19th July, 2019. It was taken by Dr. Nibu A. George, Asst. Professor of Physics Department, Baselius College. The presentation aimed at providing various options and ideas for future endeavor to the D3 students mainly. It was not only limited to the opportunities in physics but also in fields outside physics. There was information on diploma courses and other courses as well. The dates of various exams like JAM, JEST and other university admission exams were also included. The class was an eye-opener to the students to decide their future courses. Students were allowed to clear doubts regarding this topic which was elaborately explained by the Professor. The class helped students who were yet to decide on the path they have to take in their futures to make a well-informed decision. The Professor also helped students of the M.Sc. Classes by motivating them in regards to competitive exams and further opportunities in physics as a field of study.

## **FRESHER'S DAY**

"We must welcome the future, remembering that soon it will be the past and we must respect the past, remembering that it was once all that was humanly possible".

The association gave a warm welcome to the Baselian first year degree students on 20<sup>th</sup> August 2019. The students of the first year BSc Physics was received with a rose flower. The welcome speech was rendered by Lakshmi K B, association secretary. Our HOD Dr. Sindu Johns gave a thought-provoking message which was followed by various cultural activities by second and third-year students. This programme presented an opportunity for the first years to get familiarize with the

department and students. The ice breaking event was a hilarious session for them which was taken in a sports man spirit. This became a platform to unleash their hidden talents and to form a strong bond with seniors and teachers. Fresher's day concluded with a thanks giving by Aiswarya Ambady of final year UG Physics.



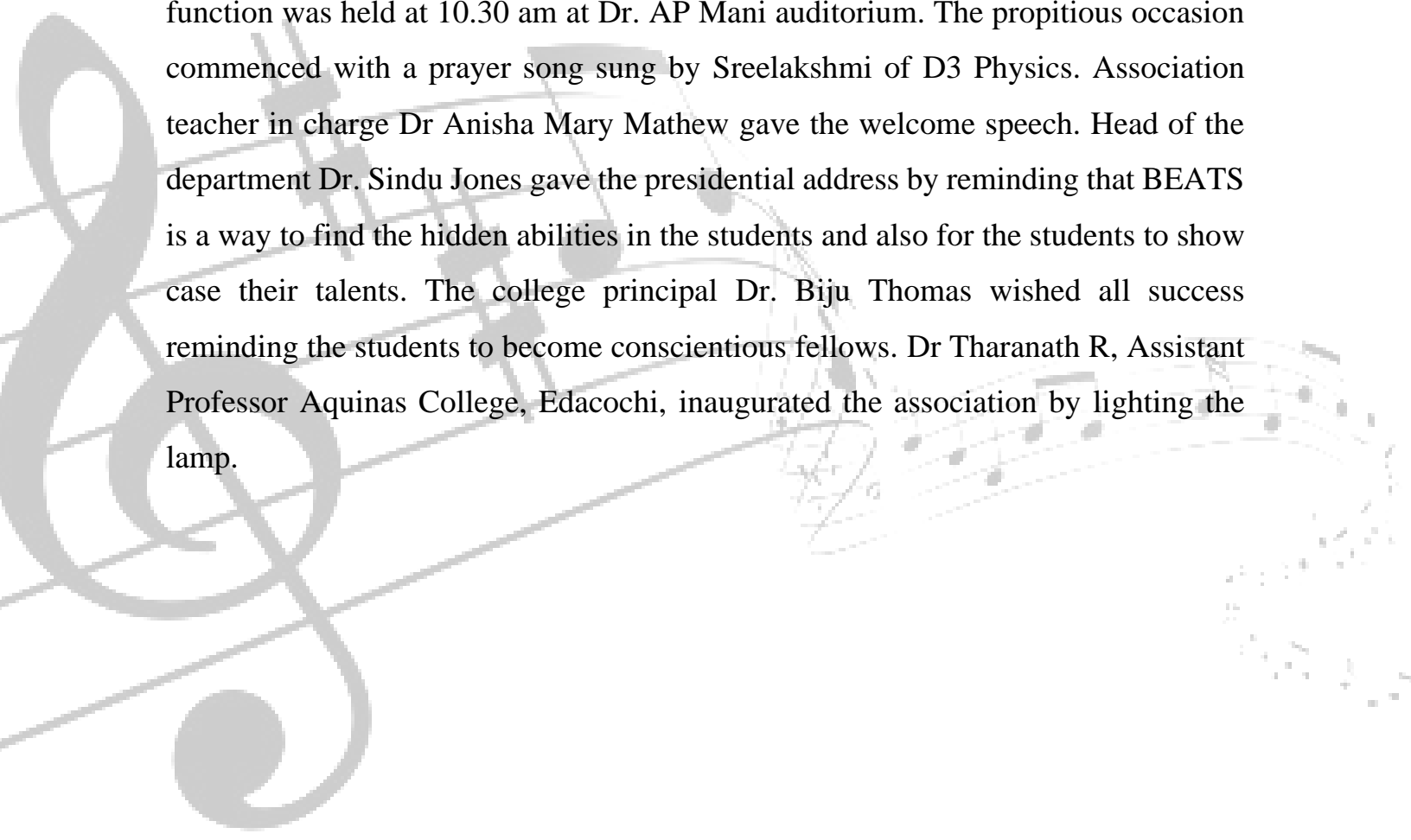




## **PHYSICS ASSOCIATION INAUGURATION - 02-09-2019**

“Good beginnings, good going, unbelievable results “.

2<sup>nd</sup> September 2019 witnessed the inaugural ceremony of the Physics association “BEATS”, opening the windows of the magical world of physics. The inaugural function was held at 10.30 am at Dr. AP Mani auditorium. The propitious occasion commenced with a prayer song sung by Sreelakshmi of D3 Physics. Association teacher in charge Dr Anisha Mary Mathew gave the welcome speech. Head of the department Dr. Sindu Jones gave the presidential address by reminding that BEATS is a way to find the hidden abilities in the students and also for the students to showcase their talents. The college principal Dr. Biju Thomas wished all success reminding the students to become conscientious fellows. Dr Tharanath R, Assistant Professor Aquinas College, Edacochi, inaugurated the association by lighting the lamp.



**Photos of inaugural function**



## **All Kerala Intercollegiate Physics Quiz Competition**

The 12<sup>th</sup> All Kerala Physics intercollegiate Quiz competition was conducted on 02-09-2019 in memory of Late Prof. Susan John K. Prof. Susan John K. was a perfect teacher, friend, guide, educator, and confidante, all rolled into one. She was famous because of her dedication and was an inspiration for her students as well as her colleagues. She had an Enthusiasm for teaching and her integrity projects a genuine concern for students that generated trust and affection. She was honest and open and shares from the heart not just lessons from books, but her life. She was patient, even in stress. She taught, and helped them strive for goals. She gave her very best! With her very touch she sparked the creativity in students. With these attributes she was like a magnet with the powerful effect of stimulating students to learn. She was a special teacher that no words can truly tell that how much she was valued for the work she did so well in her short life span of 48 years till 15<sup>th</sup> Aug 2008.

Dr Tharanath R, Assistant Professor Aquinas College, Edacochi served as the Quiz Master. 20 teams from different colleges from all over Kerala participated in the quiz competition. The competition was of various levels in which all of the contestants participated wonderfully. Those who selected from the earlier rounds were qualified for the preceding ones and last the best three teams were chosen at the final level oral quiz. Winners were awarded certificates and cash prizes. Participation certificates were given to all.

Mr. Albin P James and Manujith A of S B college, Changanassery bagged the first prize, which includes a cash prize of Rs 3000 and an ever-rolling trophy. Mr. Dany Rose J and Sarath Sasi representing CUSAT became the first runner up and the second runner up was S B college, Changanassery represented by Sanjai Sabu and Jibin Jayan





## **PROF.V JOHN MEMORIAL ALL KERALA POWER POINT PRESENTATION COMPETITIONS -02-09-2019**

The 4th Prof. V. John Memorial PowerPoint Presentation Competition were also conducted on 2nd September, 2019 in commemoration of our dear teacher Prof. Prof V. John. Students from various colleges participated in PowerPoint competition and with the support of each and every one present a healthy competition was conducted. PowerPoint presentation was really interesting. Presentations on various innovative topics came up and all of the participants participated well. Through this competition we were able to know about the understanding level of students regarding the modern updates in science as well as their concern towards environment around us. Some of the major topics discussed includes Global warming, related environmental hazards, its effects and role of science in rebuilding our society and joining the broken pieces, advancements in electronics, optical phenomena's etc.

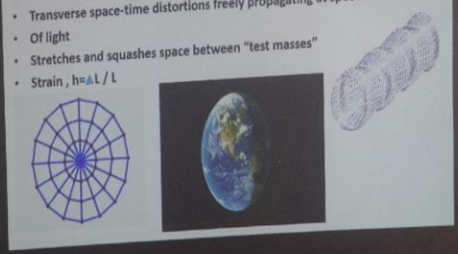
The prizes were distributed by Dr Biju Thomas and the memorial speech was rendered by Dr. Suma Bino Thomas, H.O.D. of Chemistry. She spilled out her memory with Prof. Susan John K. She remembered her as a sincere and enthusiastic friend. The session ended by the proposal of Vote of thanks by the Association secretary Aiswarya Ambady.



### Nature of Gravitational Waves

General Relativity predicts:

- Transverse space-time distortions freely propagating at speed of light
- Stretches and squashes space between "test masses"
- Strain,  $h = \Delta L / L$



The diagram illustrates the nature of gravitational waves. It shows a grid of space-time being distorted by a wave, with a globe of Earth and a cylindrical object representing a test mass.







***Valedictory  
Ceremony***

## **SEMINAR ON “INVISIBILITY: SCIENCE AND TECHNOLOGY- PRESENT SCENARIO” – 13-12-2019**

A class on invisibility was conducted by Dr. C.V. Yelamaggad from Center For Nano and Soft Matter Science, Bengaluru (CeNS) on the occasion of national seminar on “Invisibility: Science and Technology- Present Scenario” on December 13,2019. He discussed about the science behind the phenomenon of invisibility and he demonstrated that invisibility is simply a state of an object that cannot be seen- by hiding behind the podium. A video clip of the Harry Potter movie was shown where one of the main protagonists uses an invisibility cloak to render himself invisible. Dr.Yelamaggad then talked about meta-materials which are artificially structured materials used to control and manipulate light, sound and many other physical phenomena. Light rays are bent when they pass between materials with different refractive indices, such as air and water. He said that meta-materials where such materials that are able to bend light so that it passes round a region of space and emerges along its original path. This unusual bending of light by meta-materials is due to the negative refractive index which is one of the optical properties of meta-materials. This material can be used in invisibility cloak. In addition to this, he showed us some interesting videos about invisibility cloak and invisibility. The class was concluded by explaining the various opportunities for research in meta-materials and negative refractive index and invisibility. The class was very interesting and informative.





## **STUDY TOUR FOR FINAL YEAR UG STUDENTS - 03-01-2020 TO 06-01-2020**

The final year UG students went on their study tour on January 3<sup>rd</sup> 2020. The tour was for 2 days and three nights. The students were accompanied by two teachers from the faculty, Dr Anisha Mary Mathew and Ms Neha P R. The students left the college on January 3<sup>rd</sup> 2020. The first destination was Coorg. Students visited the Namdroling Monastery Golden Temple. It is said to be the largest center of Nyingma lineage of Tibetan Buddhism in the world. The interior is rich in cultural references and adorned with paintings and murals. There is a certain calmness that engulfs you when you enter the monastery.

The next location was the Bamboo Forest or Kaveri Nisargadhama. It is a delta formed by the Kaveri river. There is a hanging bridge which leads to the Bamboo Forest. There are various activities inside the forest as well. The students went for rafting along the river and also visited the Dubare Elephant Camp. The next day, the students set off for Malpe Beach early morning. The St Mary's Island was the first location. It's also known as Coconut Island and Thonsepar. They are known for their distinctive geological formation of columnar rhyolitic lava. Four islands together form the St Marys's Island.

According to Scientific Research record, rock formations found in St Mary's Island match the rock formation at Madagascar in Africa. Theory suggests that Madagascar was attached to India some million years ago. St Mary's Island is listed as one of the Geological Monuments of Karnataka and India. The students were excited to have visited a place such historical relevance. The crew returned to Malpe Beach by afternoon and spent the evening. There were various water activities at the beach as well. By evening, the students started the return journey. The bus reached the college campus on January 6<sup>th</sup> 2020. The tour was both enjoyable and also informative.





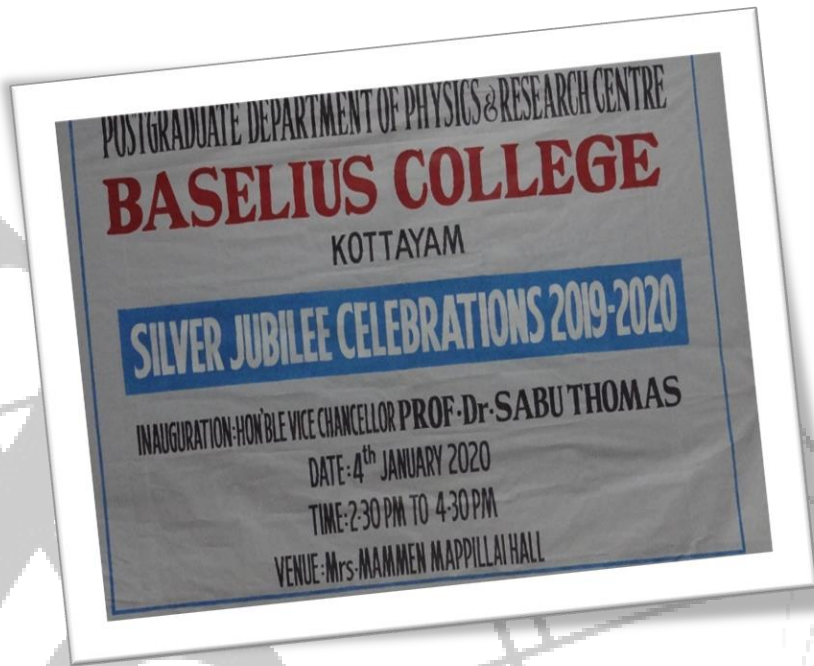
## **INAUGURATION OF ONE YEAR SILVER JUBILEE PROGRAMMES – 04-01-2020**

The inaugural ceremony of one year Silver Jubilee Programme of the Physics Department of Basilius College commenced with the lightening of lamp by MG University Vice Chancellor Dr Sabu Thomas on 4<sup>th</sup> January 2020 in the presence of college principal Dr Biju Thomas and Head of the Department Dr Sindu Jones. The programme started with the prayer song sung by the students. The former faculties and students of the department were the special guests of the ceremony. Dr Sindu Jones formally welcomed all the dignitaries. She mentioned about the upcoming programs. Dr Sabu Thomas wished success for the programs during his inaugural speech. Later, former students of the department shared their experiences and memories of college life. Student representative Jaison Thomas proposed the vote of thanks.









## **CALLISTO 2020(Physics fest) – 25-01-2020**

The Department of Physics conducted the pioneer edition of Callisto-All Kerala Physics Fest on January 25, 2020 commemorating the silver jubilee year. The Fest included a number of both science related and general events. The Fest was inaugurated by Sri Thiruvanchoor Radhakrishnan MLA, Kottayam.

There were 3 science events and 3 general events.

Pragathi was a project competition for UG/PG students. No topic as such was provided beforehand. The participants were free to choose topics of their own liking. Pragyana was also a project presentation but for HSS students. The same rules were applied for Pragyana as that of Pragathi. We had various participants in both the events. The judges valued the projects based on innovative idea as well as the practical application of the project. The participants presented the project and answered the questions asked by the judges.

Prathibha was the next science event. The aim of the event was to find the best physicist among the participants in all aspects. There were two rounds in the event. The first being a written test and the second being an actual quiz. Dr. Nibu A George of the Physics Department was the quiz master. It was one of the most awaited events in the fest. The participants enjoyed the competition and it was an enlightening experience.

The general events were face painting competition, spot photography and 3's football. Prapal, the face painting competition, explored the creative and artistic talent of the participants. Topics were provided on the spot. The judges valued how the participants incorporated it into their art. Pradarshan, the spot photography event took place inside the college campus. A topic was provided and the contestants were given an hour to photograph an image that suits the topic as well as pleases the eye. Prapal was the 3's football event and was conducted on college grounds. The event had a number of teams to participate. This involved a lot more students to participate in the fest.

Callisto 2020 was a grand success due to the active participation of the students and the teachers of the Physics Department. Winners were awarded certificates and cash prizes. Participation certificates were given to all.







ESTD 1964  
ALL KERALA  
PHYSICS FEST  
ORGANIZED BY  
DEPARTMENT  
OF PHYSICS  
BASILEUS COLLEGE  
KOTTAYAM

### pragathi

Project Competition for  
UG & PG Students

Reg Fee: ₹ 200 Per Team

1<sup>st</sup> Prize ₹ 6000  
2<sup>nd</sup> Prize ₹ 4000

Date: 08/01/2020  
9:00 AM

Event Co-ordinators:  
Anil Joseph +91 98471 2906  
Vishnu Shaji +91 80251 59396

### pragyan

Project Competition for  
PG Students

Reg Fee: ₹ 100 Per Team

1<sup>st</sup> Prize ₹ 3000  
2<sup>nd</sup> Prize ₹ 2000

Date: 08/01/2020  
9:00 AM

Event Co-ordinators:  
Binu The Zacharia +91 98471 51081  
Ananya Sridhar +91 86640 3220

### prathibha

To find the Physicist in you

Reg Fee: ₹ 150 Per Head

1<sup>st</sup> Prize ₹ 2000  
2<sup>nd</sup> Prize ₹ 1000

Date: 08/01/2020  
9:00 AM

Event Co-ordinators:  
Sneha Roy +91 88781 30216  
Lakshmi A.R +91 78679 92316

### prahaar

3s Football Tournament

Reg Fee: ₹ 150 Per Team

1<sup>st</sup> Prize ₹ 3333  
2<sup>nd</sup> Prize ₹ 2222

Date: 05/01/2020  
9:00 AM

Event Co-ordinators:  
Alhan Babu +91 99223 22855  
Kareemulla Sahar +91 83311 183495

### prapai

Face painting competition

Reg Fee: ₹ 200 Per Team

1<sup>st</sup> Prize ₹ 2000  
2<sup>nd</sup> Prize ₹ 1000

Date: 08/01/2020  
9:00 AM

Event Co-ordinators:  
Riya Elizabeth John 874638077  
Vishwanaga A.R 702868932

### pradarshan

Spot Photography

Reg Fee: ₹ 100 Per Head

1<sup>st</sup> Prize ₹ 1000

Date: 08/01/2020  
9:00 AM

Event Co-ordinators:  
Navya Anus Rajan +91 9544047468  
Rohith Prathap Nair +91 7812708052

physics\_fest\_2020 | calltoaction@2020@gmail.com

## **NATIONAL SCIENCE DAY CELEBRATION - 25-02-2020**

Research and Post Graduate Department of physics conducted a one-day Workshop on Science and technology for sustainable future on the occasion of National science day 2020 on 25<sup>th</sup> February 2020. The programme was sponsored by Kerala State Council for Science, Technology and Environment supported by Department of Science and Technology, Govt. of India and Co - sponsored by Karshakasree – Malayala Manorama, Kottayam and Mahatma Gandhi University, Kottayam held at Dr. A P Mani Media Centre, Baselius college, Kottayam.

The registration for the programme was started by 9:30 am. The programme was inaugurated by Dr Aravindakumar C. T ( Pro - vice -Chancellor , Mahatma Gandhi University, Kottayam) around 10:00 am. After the inaugural function a talk on the topic " Green technologies: status and path towards sustainability " Was given by Dr Aravindakumar C. T.

After the break, at 11:40 next session was started which included a talk on the topic " Organic farming in terraced cultivation " by Sri. KorahThomas, Assistant Director (Rtd) of Agriculture Department, Pambady, Kottayam. As the part of the session Organic farming in terraced cultivation, a hands - on training on recycled paper pen and paper bag was held after the tea break at 2:55 pm and as a part of it a take home pack of seeds was given. At 3:45 the interaction section between the audience and orators was held and the certificates were distributed.

Thus, the one-day workshop came to its end on around 04:00pm after the vote of thanks. The programme was very informative and gave a chance to think about ideas on a sustainable development and sustainable future.







## **INDUSTRIAL VISIT REPORT – 2-03-2020**

As per the curriculum of Mahatma Gandhi University, it was necessary for final year BSc Physics students to visit the industries / research institute to get the practical knowledge about best practices followed there, so that the Department of Physics, Baselius College planned, and organized research institute visit which helped for student to increase interest in research culture.

The Industrial Visit was organized with prior permission and guidance of Br. Biju Thomas, Principal (Baselius College) and Dr. Sindu Jones, HOD, Department of Physics. The Final year B.Sc Physics students of Baselius College participated in this industrial visit. The 23 students and four staff members visited Rubber Research Institute of India (RRI) Kottayam on 2<sup>nd</sup> March 2020.

After the completion of the visit, the students expressed their thanks to the officials for the opportunity given by them. We conclude that while going through the entire industrial visit, the cooperation is found to be very well organized, developed & most ideal institute in every walk of its production, administration & management aspects. It is rightly said that “See & know’ is better than ‘read & learn’. We have got real feel of institute research activities after this visit.





The year was eventful and the department definitely took the initiative in creating both a studious and creative environment for the students. The various competitions and events conducted gave the students an opportunity to participate and showcase their talents.



## **Student's Achievements**

### **Varghese Reji**

- Being recognized as the NPTEL Discipline Star December 2020.
- Successfully Completed 10 NPTEL Online courses of Physics conducted by IITs.

### **Lakshmi K B**

- Best Outgoing student award of the college was awarded to Lakshmi K B of D3 Physics.
- Lakshmi K B of D3 Physics was awarded as the Best NSS volunteer of the academic year 2018-2019.
- Lakshmi K B of D3 Physics was attended the 3-day State level disaster Management camp conducted by KVYAF in 2019.

## **Cultural Events**

### Lakshmi K B of D3 Physics

1. Secured Second Prize for MG University Kalolsavam for Margamkali.
2. Secured first prize for spot choreo in the inter-collegiate fest conducted by Maths Department of Baselius College.

### Swathy Krishna of D2 Physics

1. Secured A grade in Aksharaslokam, in the MG University arts Festival

2. Received first prize in Aksharaslokam, Kuchipodi, and Bharathanatyam, and II<sup>nd</sup> prize in Malayalam Essay writing at college level

Elsa Susan Kochummen of D2 Physics

1. Received first prize in Short Story English, and II<sup>nd</sup> prize in Short Story Malayalam writing and Mime Competition at college level
2. Secured A grade in Short Story Writing English, in the MG University arts Festival
3.
  - Rajalakshmi S of D2 Physics secured second position in Katha prasangam at college level.
  - Ajay Sankar of D2 Physics received first position in One Act Play at college level.
  - Midhuna C P of D2 Physics got Second position in Mime competition at College level.
  - Krishnendu R, Rajalaksmi S and Anjitha Suresh of D2 Physics got first Prize with A grade in Thiruvathira at the college level.