



RIPPLES



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NEWSLETTER OF DEPARTMENT OF PHYSICS



National Space Day

On the occasion of National Space Day, the Department of Physics in association with Sherlock Ohms hosted a series of engaging activities to commemorate the successful landing of Chandrayaan-3. The speaker for the day was Dr. Reshma Raut Dessai from School of Physical and Applied Science, Goa University delivered a talk on the topic titled "Space and the effect of micro-gravity".

To foster the presentation skills and to test the knowledge about space science, a Power Point Presentation competition was organized on 23rd August 2024. Dr. Sanjay Gaikwad and Mr. Sachit B. Kuttikar were the judges for this event.

To encourage creativity and enhance awareness about space exploration through visual art, a poster presentation competition was organized on 24th August 2024. Mr. Sachit B. Kuttikar and Mr. Utkarsh Gaonkar were the judges.

Student Editor:

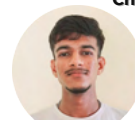
Pradyut Ghosh
Harsh Volvoikar
Chrysander Goes

Faculty Advisor:

Dr. Ananya Das



Chrysander



Pradyut



Harsh

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Celebrating National Space Day

The poster presentation competition saw the participation of 45 individuals across 17 groups. The first place was secured by the Team, consisting of **Shreya Keluskar**, **Mayeera Mokashi**, and **Isura Pawar**, from F.Y.B.Sc. Physics. The second place went to the team, which includes **Reylan Rodrigues**, **Somesh Desai**, and **Varada Naik**, from T.Y.B.Sc. Geology. The third place was awarded to the team, comprising **Virginia Dias**, **Ashel Carvalho**, and **Grita Travasso**, from M.A. English, Part II.

Poster Making : Mission Chandrayan 3: A living dream of Indians



Prize Distribution For Poster Presentation



Prize Distribution For Power Point Presentation

Power Point Presentation : India's Chandrayan Mission

The competition featured seven participants from different disciplines. **Manasvi Desai** from T.Y.B.Sc. Physics secured the first place, followed by **Virginia Dias** from M.A. English Part II in second place. **Chrysander Goes** from S.Y.B.Sc. Physics claimed the third place.

AUGUST, 2024

Celebrating National Space Day



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Celebrating National Space Day



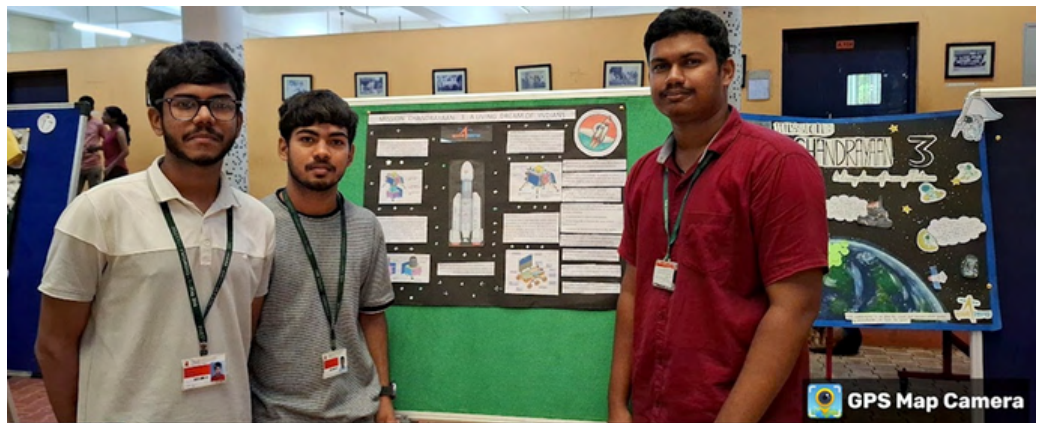
Vice Principal Mr. Kumresh V. C presented participation certificates to the students of our college who participated in the District Level (South Goa) National Space Day programme organized by Goa State Council for Science and Technology in association with Department of Science, Technology and Waste Management, Govt. of Goa and DST, Govt. of India, on 21st August 2024 at Ravindra Bhavan, Margao.



AUGUST, 2024

Celebrating National Space Day

Posters on Mission Chandrayan 3: A living dream of Indians



Faculty Achievement

Congratulation Dr. Malati Dessai!

Our faculty **Mrs. Malati Dessai** successfully defended her doctoral thesis titled "**Theoretical Studies on the Scanning Tunneling Microscope**" on the 27th of June 2024 at BITS Pilani K K Birla Goa Campus, Goa. Prof. Arun V. Kulkarni, Department of Physics, BITS Pilani K K Birla Goa Campus, Goa was her thesis advisor.



Dr. Malati Dessai

In the thesis analytical calculations for current densities and currents are carried out for both linear and non linear potentials in an STM. For the linear trapezoidal barrier potential Airy function solutions are used in the calculation of tunnelling current densities, and the results are compared with corresponding WKB results using planar model. The planar model current densities are converted to currents for curved tips and flat samples by using integration over a field line method in the prolate spheroidal coordinate system. A novel potential, termed the "Russell Potential," is introduced for each field line, exhibiting slight nonlinearity as a function of the distance along the field line. To account for this nonlinearity, as well as the effects of the image force, a multi-slice method utilizing the transfer matrix approach is developed. This method is employed to calculate tunneling currents for the Russell potential alone and for a combined trapezoid and image force potential.

For details visit: <https://arxiv.org/abs/2402.00026>

<https://doi.org/10.48550/arXiv.2402.00026>

Research Publications

Dr.Ananya Das, in collaboration with Pallavi P. Gaude and Prof. Ramesh V. Pai from Goa University, published a research paper titled 'Superfluid, phase-separation, super solid and density wave phases in extended Bose-Hubbard model' in AIP Conf. Proc. 2995, 020001 (2024). For details visit: <https://doi.org/10.1063/5.0178194>

Dr.Ananya Das, in collaboration with Chetana G. F. Gaonkar, Pallavi P. Gaude and Prof. Ramesh V. Pai from Goa University, published a research paper titled 'Revisiting pairing of bosons in one-dimensional Bose-Hubbard model with three-body interaction using CMFT+DMRG method' in The European Physical Journal D 78: 43 (2024). For details visit: <https://doi.org/10.1140/epjd/s10053-024-00834-6>

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Subject Talk:

Prof. Ramesh V. Pai, Dean, School of Physical and Applied Science, Goa University delivered a talk on '**How the elements are formed**' on 31st August 2024, which was attended by 81 students and 9 faculty members from various departments. It was well received by the students.



Visit of Physics Students and Staff of Gogate Jogalekar College of Arts and Science (Autonomous), Ratnagiri:



Twelve students and two faculty members from Physics Department of Gogate College, Ratnagiri visited our college campus on 24th August 2024. The faculty members of our department demonstrated a few experiments and also explained the related concepts, which was appreciated by the students and faculty of Gogate College.

Faculty Participation

Mr. Yatin P. Desai, Head of the department participated in Capacity Building Workshop on "Leveraging Generative Artificial Intelligence (AI) for Pedagogical Excellence in Higher Education" organized by the Directorate of Higher Education (DHE) and Goa State Higher Education Council on 10th June 2024.

Dr. Ashish M. Desai, Assistant Professor, Department of Physics completed a Two-Week Online Workshop on QuantumATK held from 24th June to 9th July 2024 organised by SIAS research centre, Kerala.

FRESHER'S 2024

The Freshers' Day event organized by the Department of Physics in association with the Sherlock Ohms Club took place on August 17, 2024, and was a grand success. This annual event aimed to welcome new students into the department, introduce them to the existing members, and provide an engaging platform for interaction and fun

The event kicked off with a warm welcome to former students of the Physics Department, followed by an enthusiastic greeting for the newcomers, who received tokens of welcome. The freshers were introduced to the faculty and staff, with HOD Yatin sir sharing his thoughts with the audience. The Sherlock Ohms Club was introduced, highlighting its activities and encouraging student involvement.

Report prepared by Ms. Vira Desai



The event featured various activities, including a song performance by Minoshka, a Pictionary game that combined fun with learning, and a dance performance by the freshers. Several spot prizes were awarded for Instagram follow requests, language proficiency, and push-ups. A quiz competition tested students' knowledge of physics and general trivia. The program concluded with the crowning of Mr. and Ms. Freshers, with Hillsberg and Trisha taking the titles.



Achievements in NCC:



LCPL Manasvi Gunaji Desai and Cadet Anisha Vithal Pacchad celebrating Independence day: on 15th August 2024, at College Campus

NCC B Certificate Examination Success:

Two students from the Physics Department, **Cadet Anisha Vithal Pacchad** and **LCPL Manasvi Gunaji Desai**, successfully passed the National Cadet Corps (NCC) **B Certificate Examination** held on 11th February 2024 at Pharmacy College, Panaji. Cadet Anisha Vithal Pacchad earned a commendable Grade B, while LCPL Manasvi Gunaji Desai achieved an impressive Grade A in the exam. The Karnataka and Goa Directorate NCC conducted this prestigious examination.

Outstanding Performance at Combined Annual Training Camp (CATC)

Cadet Anisha Vithal Pacchad showcased her artistic talents by securing the 3rd place in the drawing competition at the Combined Annual Training Camp (CATC). The camp, organized by the 1 Goa Battalion NCC, Panaji, took place at Government College of Agriculture, Sulcorna, Quepem, from 22nd December to 31st December 2023. The drawing competition, centered around the theme "Swachh Bharat," and Cadet Anisha's creative expression earn her well-deserved recognition.



Cadet Anisha receiving the medal from Lt. Col. Jesus Furtado, in the presence of Dr. Pradeep Jatal, Caretaking Officer (CTO).

Achievements in Sports:

Mr. Ganesh Tamburkar of first year B.Sc Physics program secured first place in 4km road race under Boys 19 Category organized by Directorate of Sports and Youth Affairs Goa, on the occasion of Independence day. Mr Ganesh received the trophy from the officials of the sports and youth affairs department.



Mr. Ganesh Tamburkar secured third place in inter collegiate cross country championship under 10km mens category, organized by Goa university on 17th August 2024. He also qualified for the nationals. The staff and students of the department are proud of his achievements. Mr Balchandra Jadar Assistent Director of Physical Education and Sports, Goa University was presenting medal to Mr Ganesh.



Student Participation



Ms. Manasvi Desai from the third year B.Sc. Physics program participated in the elocution competition at National Space Day 2024. The event was organized by Goa University in collaboration with the Master Control Facility of the Indian Space Research Organisation (ISRO), Hassan, Karnataka, on 26th July 2024. Dr. Ashish M. Desai from the Department of Physics also attended National Space Day 2024.