Goa University

Mathematics Discipline, School of Physical and Applied Sciences, Goa University.

π Day Lecture

1. Title of the Event/Activity/program	π Day Lecture
2. Date and Time	17/03/2025, From 2:30pm-3:30pm
3. Mode of conduct (Physical/Online)	Physical Mode
4. School/ Directorate/ Section	Mathematics Discipline, School of Physical and Applied Sciences.
5. Collaborating Agency/School/Directorate	-
6. Detail of the Resource Person (Brief biodata)	**Amartya Kumar Dutta** is a Professor of Mathematics at the Indian Statistical Institute (ISI), Kolkata. He earned his PhD in Mathematics in 1994 from the Tata Institute of Fundamental Research (TIFR), Mumbai, under the guidance of Prof. S.M. Bhatwadekar. His research focuses on Commutative Algebra and Affine Algebraic Geometry, and he has published several papers in these areas. A dedicated teacher and mentor, **Prof. Dutta** has been a faculty member at ISI Kolkata since 1996. Over the years, he has guided numerous students, some of whom have achieved significant recognition—most notably, his former PhD student Neena Gupta, who was awarded the prestigious Infosys Prize in January this year and was invited to deliver the esteemed Emmy Noether Lecture. Beyond his work in mathematics, **Prof. Dutta** has spent more than 25 years actively studying, writing, and lecturing on the history

	of science, with a particular focus on Ancient Indian Mathematics. His contributions to this field earned him the first-ever Satish C. Bhatnagar Award from the Indian Mathematical Society for his work in the History of Mathematics. He has also been teaching courses on the history of mathematics in ancient India and science in modern India as part of the one-year Indology program at the Ramakrishna Mission Institute of Culture, Kolkata. Since January 2022, he has been contributing a series of articles on Mathematics in India to the mathematics magazine BhAvanA.
7. Number of Faculty attended/participated	5
8. Number of Student attended / participated	39
9. No. of external students/faculty/other participants	6
10. The objectives of the Program/activity/event	1. **Exploring the Concept of π** – Understanding the mathematical constant π, its significance, and its historical development. 2. **Highlighting Indian Contributions** – Showcasing how ancient and medieval Indian mathematicians, particularly **Madhava of Sangamagrama**, contributed to the study of π. 3. **Discussing Mathematical Series** – Introducing **Madhava's infinite series for π** and explaining its importance in the history of calculus. 4. **Encouraging Interest in History of Mathematics** – Inspiring students and scholars to explore the **rich mathematical heritage of India** and its global impact.
11. Description of the Program/activity/event	On March 17, the School of Physical and Applied Sciences organized a special π Day lecture on the topic "π in Indian Mathematics." The event began with a welcome and introduction of the speaker by Assistant Professor **M. Kunhanandan.**

	The lecture was delivered by **Professor Amartya Kumar Dutta** from the Indian Statistical Institute (ISI), Kolkata. During his talk, Prof. Dutta explored the presence of π in Indian mathematical traditions, focusing on the series formulated by Madhava. He also demonstrated how the Kerala School of Mathematics derived a value of π using geometric shapes such as circles, and rectangles. The event concluded with a vote of thanks by event coordinator **Mr. Mudraj Pagi.**
12. Benefit/Key outcomes of the Program/activity/event	1. Enhanced Understanding of π – Participants gain deeper insights into the significance of π and its historical calculations in India. 2. Appreciation of Indian Mathematical Contributions – Awareness of how Madhava and the Kerala School of Mathematics contributed to the study of π and early calculus. 3. Interdisciplinary Learning – Connecting history, geometry, and calculus, making mathematics more engaging and holistic. 4. Encouragement for Further Study – Inspires students and researchers to explore Indian mathematical traditions and their global influence. 5. Understanding of Mathematical Techniques – Learning about the geometric methods used by the Kerala School to approximate π.
13. Enclosures with report	1. Brochure 2. Attendance 3. Geo-tag photos

DATE: 27/03/25

Mr. Mudraj Pagi
Coordinator
Assistant Professor in Mathematics

M. Kunhanandan
Program Director
Assistant Professor in Mathematics

Prof. Ramesh V. Pai
Dean, SPAS
Professor in Physics

DEAN
School of Physical and Applied Sciences
Goa University, Goa

GOA UNIVERSITY

SCHOOL OF PHYSICAL AND APPLIED SCIENCES

MATHEMATICS DISCIPLINE

Invites you for the Pi Day Lecture on

π IN INDIAN MATHEMATICS

Abstract:

The talk shall highlight a few landmark results by Indian Mathematicians related to the constant π.

Date :
17th March 2025
02:30 PM
Room - AG 34, SPAS, Block A

SPEAKER

PROF. AMARTYA KUMAR DUTTA

Statistics and Mathematics Unit
Indian Statistical Institute, Kolkata

Prof. Ramesh V. Pai
Dean, SPAS

Mudraj Pagi
Coordinator

M. Kunhanandan
Program Director, Mathematics

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Mathematics Discipline, SPAS, Goa University.

'π Day Lecture'

Speaker: Prof. Amartya Kumar Dutta
(ISI-Kolkata)

ATTENDENCE

Date: 17/03/2025 **Time:** 2:30pm-4:00pm **Venue:**AG-34,SPAS,Block A

Sr. No	Name	Student/Faculty	Sign
21	Joshle Colaco	student (Physics)	
22	Sr. Cleris Fernandes	student (Physics)	
23	Shubham Kelkar	student (Physics)	
24	Disha Savant	student (Physics)	
25	Sheena Vaigankar	student (Maths)	
26	Tanvi Kunkolkar	student (Maths)	
27	Anchal Sawant	student (Maths)	
28	Sanjana Sawant	student (Maths)	
29	Riya Parsekar	student (Maths)	
30	Saisha Redkar	student (Maths)	
31.	Rutika Gadekar	student (Maths)	
32.	Monal Nagvenkar	student (Maths)	
33.	Ruchita Rao.	student (Maths)	
34	Shyam Velip	student (Maths)	
35	kanak konardkar	student (Maths)	
36	Vandana Naik	student (Maths)	
37	Shashank S. Khanelkar	student (Maths)	
38	Neenad Adkonkar	student (Maths)	
39	Pratham . Namdev . Sukadkar	student (Maths)	
40	Mareos Sachin Sukhathankar	student (Maths)	

Coordinator: Mudraj Pagi
Sign:

Program Director: M. Kunhanandan
Sign:

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ATTENDENCE

Date: 17/03/2025 **Time:** 2:30pm-4:00pm **Venue:**AG-34,SPAS,Block A

Sr. No	Name	Student/Faculty	Sign
1.	Benbo Fernandes	Student (Maths)	
2.	Dr. M. Tamba	Retd. Faculty	
3.	Princeton Da Gama	Student (Maths)	
4.	Divyatmaj Tambankar	Student (Maths)	
5.	Dr. Jessica Fernandes e Pereira.	Faculty	
6.	Aryan B. Kavthankar	Student (Maths)	
7	Dhiraj Velip	student (Maths)	
8.	Mayuri M Gosavi	Student (Maths)	
9.	Srvi Bhagat	Student (Maths)	
10.	Aswathy C.B Panicker	Student (Maths)	
11	Anushka M. De Braganca	student (Maths)	
12	Dikshita Naik	Student (Maths)	
13	Siya S. Desai	Student (Maths)	
14	Pranjali Pradeep Pawool.	Student (Maths)	
15.	Manthan Sawant Dessai	Student (Maths)	
16.	Rupam Naik	Student (Maths)	
17.	Tanuja R. Mandrekar	Student (Maths)	
18.	Shivani D. Naik.	student (Maths)	
19.	Sanvari L. Morajkar	Student (Maths)	
20.	Vidhina D. Faldesai	Student (Maths)	

Coordinator: Mudraj Pagi
Sign:

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Speaker: Prof. Amartya Kumar Dutta
(ISI-Kolkata)

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Date: 17/03/2025 **Time:** 2:30pm-4:00pm **Venue:**AG-34,SPAS,Block A

Sr. No	Name	Student/Faculty	Sign
41	M. Kunhanandan	Faculty	
42	Aniket D. Palyekar	student (Maths)	
43	Pratik C. Gawade	student (Maths)	
44	Brandon Fernandes	Faculty	
45	Mudraj Pagi	Faculty	

Coordinator: Mudraj Pagi
Sign:

Program Director: M. Kunhanandan
Sign:


The Rational Approximation 22/7 for π
π = 3.14159265358979... ≈ p/q. Estimate p, q.
22/7 = 3.142857142857...
There are two (correct) statements that can be made about the approximation 22/7 for π.
• The value is correct only up to three decimal digits.
• It is the second convergent in the SCF expansion of π. Indeed, it is the the best rational approximation for π among fractions with q ≤ 63.
Which is to be emphasised: "only two places" or "best among small denominators"?
Depends: is the quest for accuracy absolute? Or constrained by an implicit restriction on the size of the denominator?
8 / 1
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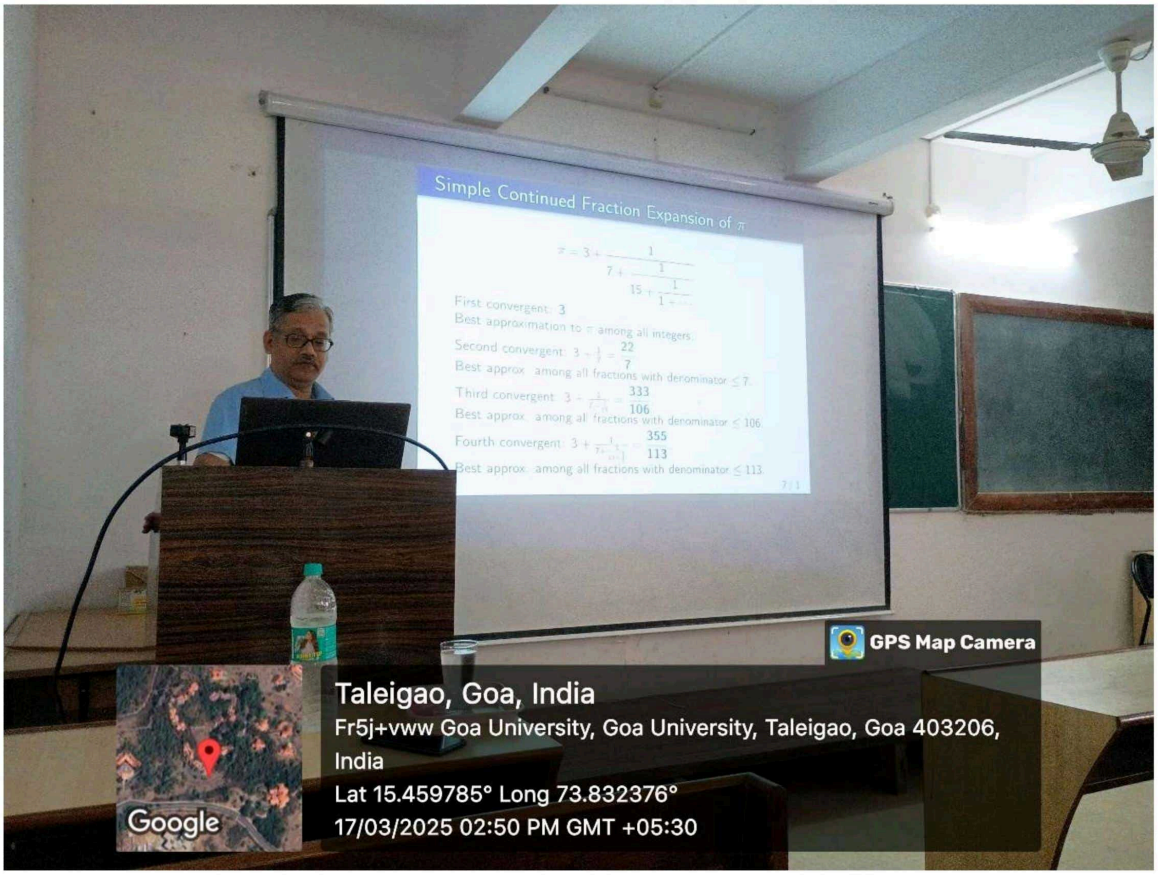
Simple Continued Fraction Expansion of π
$\pi = 3 + \cfrac{1}{7 + \cfrac{1}{15 + \cfrac{1}{1 + \cdots}}}$
First convergent: 3
Best approximation to π among all integers.
Second convergent: $3 + \frac{1}{7} = \frac{22}{7}$
Best approx. among all fractions with denominator ≤ 7.
Third convergent: $3 + \cfrac{1}{7 + \cfrac{1}{15}} = \frac{333}{106}$
Best approx. among all fractions with denominator ≤ 106.
Fourth convergent: $3 + \cfrac{1}{7 + \cfrac{1}{15 + \cfrac{1}{1}}} = \frac{355}{113}$
Best approx. among all fractions with denominator ≤ 113.
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