



Computer Science Research Colloquium



# 20 24

# NEWSLETTER

Kerala University of Digital Sciences, Innovation and Technology  
Digital University Kerala  
Thiruvananthapuram

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## MoU Signed Between DUK and Reflections Infosystems

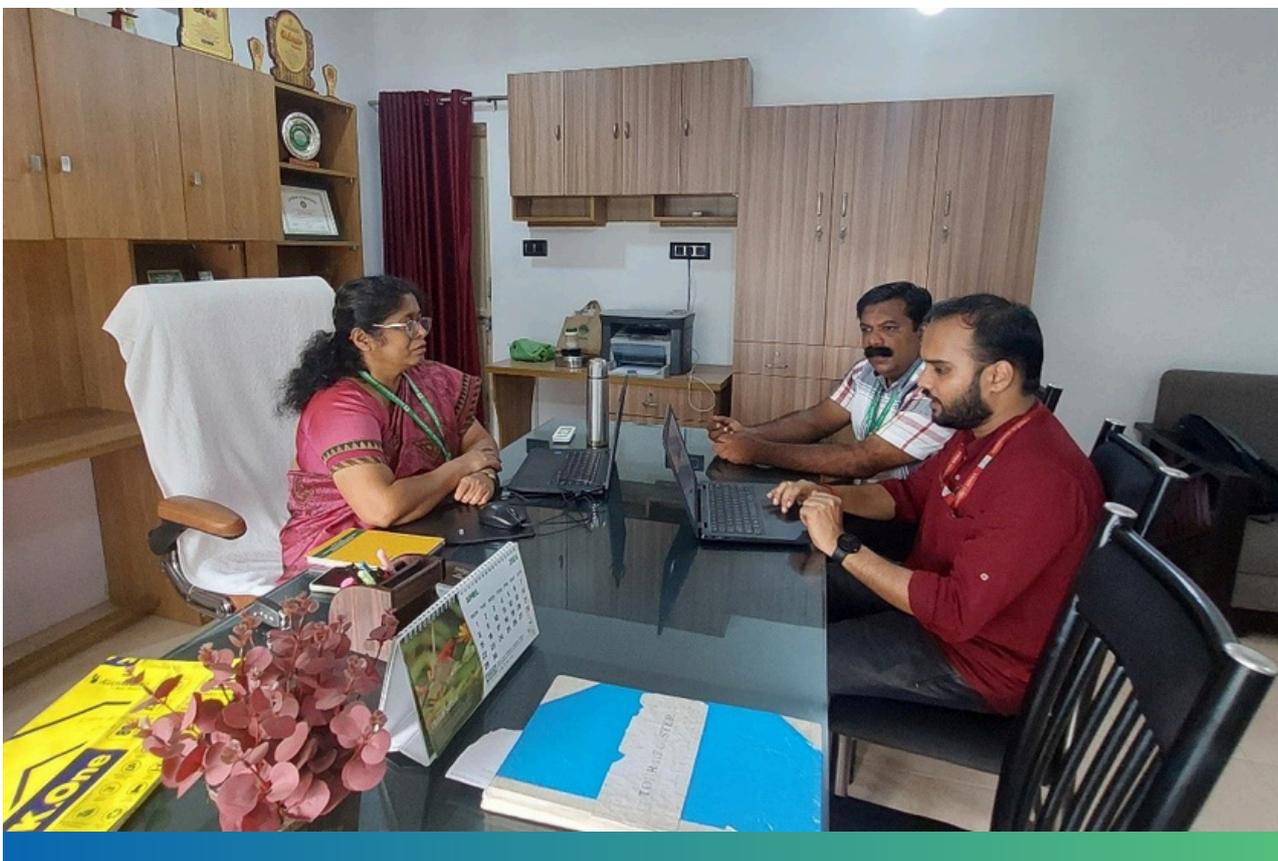
DUK signed an MoU with Reflections Infosystems, a deep-tech company and technology partner for leading companies across domains such as banking and financial services, healthcare, retail, logistics and transportation, automotive, and media and entertainment. The MoU aims to encourage collaboration in terms of joint R&D, tackle industry challenges, deliver joint outreach programs and provide industry exposure to students. The MoU was formally signed on 22 April 2024 at the DUK Campus between Prof Mujeeb A, Registrar, DUK and Deepa Sarojammal, CEO, Reflections, in the presence of Prof Saji Gopinath, Vice Chancellor, DUK and other representatives of both organizations.



# DUK PROGRAMS

## Discussion On The Differentiation Of Biotic And Abiotic Stress In Horticultural Crops

A discussion on the use of Machine Learning (ML) algorithms to distinguish between biotic (pest/disease) and abiotic (nutritional imbalance) stress in horticultural crops. This innovative approach has the potential to revolutionize crop health management practices in Kerala. The discussion held at Kerala Agricultural University's Krishi Vigyan Kendra (KVK) in Kottarakkara on April 16th, 2024, brought together experts to explore the possibilities of data collection for this research. Umasankar, Senior Research Associate from the Centre for Digital Transformation and Innovation (CDTI) of Digital University Kerala, participated in the discussion alongside Dr Bini Sam, Professor and Head, Krishi Vigyan Kendra, Kollam, and Dr Saroj Kumar V, Assistant Professor in Horticulture, Kerala Agricultural University. The deliberation focused on strategies for gathering robust data, including field observations, physiological measurements, and image acquisition. A key emphasis was placed on data standardization, labelling, and quality control to ensure the effectiveness of the ML models.



## PMAJAY Second Schedule of Induction Programme

Centre for Executive Education and Continuing Studies is conducting PMAJAY Programme in association with SC Development Department which provides residential training for SC students in Cyber Security, Electronics and Block Chain domains for one year. The Second Schedule of Induction programme was conducted on 29th April 2024 at DUK Campus in which about 30 students participated.



## Generative AI Session - 18th April to 20th April 2024

Centre for Executive Education and Continuing Studies organized a day workshop for interested faculty / Project staff /Admin Office Staff on 18th April 2024 and a two-day deep dive session exclusively for Researchers/ Research scholars on 19th April and 20th April 2024. Shri Sunil Prabhakar, a well-known Gen AI expert of various tools in the market, has conducted the workshop.

The workshop kickstarted with a professional approach to searching for academic research on the internet, using search engines, knowledge engines, and academic databases and it then delved into the impact of Artificial Intelligence (AI) on scholarly research, including literature exploration, literature review, reference management, and data analytics. It helped researchers understand how AI tools can accelerate the literature review process, automate data extraction, and facilitate the synthesis of information from large databases.



## Session on How to Overcome Inhibitions and Find Confidence to Speak

Training and Placement Cell is organized a session on - **How to Overcome Inhibitions and Find Confidence to Speak**. These sessions held at the Gallery Hall 45, and we had the privilege of having Mr. Bejoy Peter, a seasoned Corporate Trainer, as the facilitator. All students were invited to attend the session.

These sessions were an excellent opportunity for all the students to enhance their interview skills and make a positive impact on their career prospects. Mr. Peter is renowned for his engaging and interactive training style, made those sessions highly valuable.



## Session on "Industry Expectations and Readiness"

Training and Placement Cell, DUK organized a session on “ Industry Expectations and Readiness” on 25th April 2024, Thursday. The session was handled by Mr. Vishnu Prasad, Senior HR Manager, Srishti Innovative. The session aimed to equip second-semester students with essential insights into the expectations of the industry and strategies to enhance their readiness for the professional world. About 120 second semester students attended the session.



## One-Day Industrial Visit to KSAAC - Noorul Islam Centre for Higher Education(NICHE)

As part of the digital transformation initiative of Center for Executive Education & Continuing Studies (CEECS), 30 students and 4 professors from the Department of Information Technology specialization in cybersecurity and forensics of NICHE visited KSAAC on April 23, 2024. Participants expressed appreciation for the comprehensive coverage of cybersecurity topics and the interactive nature of the sessions. The exploration of hardware security data recovery labs left a lasting impression, empowering participants with actionable insights and dreams. The NICHE visit to KSAAC exemplified the commitment to fostering cybersecurity awareness and preparedness among faculty and students. By equipping participants with essential knowledge and skills, this initiative has fortified the collective defense against cyber threats, paving the way for a safer and more secure digital future.



## One Month Cyber Security Program -Secure Your Digital Life

Kerala Security Audit and Assurance Center (KSAAC) hosted four-week training programme on cyber security for the 4th semester Computer Hardware Engineering students of Govt Polytechnic College Attingal, Thiruvananthapuram during April 4-30, 2024 at Digital University campus, Technopark Phase 4. A total of 54 students actively participated in the programme. It was organized under the CSR activities of the DUK.

The purpose of the programme was to provide necessary knowledge and skills to protect their information assets and secure their cyber space. KSAAC Team members handled several sessions on cyber security, digital forensics, network security, hardware security, Python programming etc. An online examination was conducted to assess their learning levels. The certificate of participation was awarded to all the students who actively participated in all the sessions and completed the assessment process.



## SOCIAL ENAGAGEMENT CENTRE

### NSS Camp Certificate Distribution

On April 22, 2024, the National Service Scheme (NSS) community gathered to recognize student volunteers' exemplary efforts in the Athiyanoor NSS camp, the first NSS camp organized by the NSS Unit of DUK. Anchored by Aswathy M, MSc Data Analytics and Geoinformatics, the event commenced with a warm welcome from Shahana T K, NSS Secretary and Student, MSc Data Analytics and Bio AI. Prof. A. Mujeeb, Registrar of Digital University Kerala, inaugurated the certificate distribution function, setting the tone for an inspiring afternoon.



Certificates were distributed to all participants, acknowledging their dedication to social causes. Sai Shankar, Student, MSc Ecology and an NSS volunteer, shared his experiences from the 7-day NSS camp. This was followed by felicitation from Prof. Pradeep Kumar K, NSS Coordinator, who lauded the NSS volunteers' commitment, resulting in a successful camp. Aswin P, MSc Computer Science with Data Analytics, NSS Secretary, delivered the vote of thanks, concluding the event with gratitude for all involved. The event showcased volunteerism and community engagement, inspiring attendees to continue their noble endeavours.



## DACE-2023-24: DUK Student Teams Present Innovative Ideas at Allianz

On April 30th, 2024, four student teams from DUK were invited to Allianz Technology, Technopark, Thiruvananthapuram, the end-to-end IT solutions providing arm of the multinational, Allianz Group. The teams presented the problems identified and the innovative solutions proposed as part of the DACE (Digital Access for Community Empowerment) course conducted in the first semester. The four teams presented to the top management of Allianz Technology, consisting of members from the head office in Munich, and offices in Pune and Thiruvananthapuram. The community problems presented were challenges faced by the tribal, fishing, and handloom communities in Thiruvananthapuram. The event provided a discussion forum between students, DUK faculty members, and Allianz representatives. Insights were shared, perspectives were exchanged, and valuable feedback was provided. DUK and Allianz share a commitment to developing innovative solutions through the adoption of technology for sustainable development. The visit underscored the potential for fruitful industry-academia collaboration by encouraging socially impactful projects and initiatives.



## Fire and Safety Week Celebration

The Social Engagement Centre at DUK organized a Fire and Safety Celebration on April 25th, 2024, as part of the Fire and Safety Week (April 14 - 20). The event's objective was to raise awareness and promote proactive measures for fire safety among DUK's students and staff members.

A quiz competition was organized in which seven teams participated. Sai Shankar, Msc Ecology, and member of the SEC core team, led the quiz competition. Rahul Raj (Sem 4, MTech CS) and Denil Tom (Sem 4, MSc CSDA) won the first prize, while Megha Manoj (Sem 2, MBA) and Jayadev (Sem 2, MBA), the second prize.

The Fire and Safety team from the Kazhakootam Branch was invited to conduct an awareness session on fire safety, CPR, fire prevention, emergency response strategies, and evacuation protocols. The awareness class was led by Fire and Rescue Officers Shri. Sanu S K and Shri. Sajith C from the Kazhakkuttam fire station. The participants actively participated in the session by asking questions and sharing their experiences. This helped to enhance their knowledge and understanding of fire safety principles.



## Fire and Safety Week Celebration



### 1st Prize



Denil Tom  
MSc CSDA



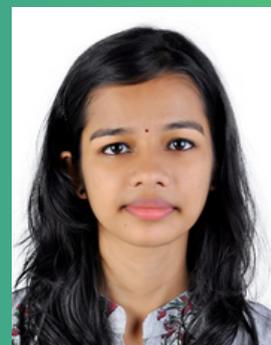
Rahul Raj  
MTech CS



### 2nd Prize



Jayadev  
MBA



Megha Manoj  
MBA

## IoT Workshop for Pullampara School Students

Institution's Innovation Council ( IIC ) and Innovation Club - DUK organised a hands-on workshop for the school students from Pullampara Panchayat as part of the DREAMS project on 6th April 2024.



## Won first Prize at iCARE-hs Conference

Ms. Nayana Uday and Ms. Judy K George were awarded with the first prize for their poster titled "An fMRI-based centrality analysis of brain connectivity in Autism Spectrum Disorder" at the international conclave on AI and Robotics for enabling healthcare singularity (iCARE-hs) on April 21, 2024, held at O by Tamara, TVM. The event was jointly organized by Digital University Kerala, Hridayalaya Heart and Robotic Research Centre, and the Genetika Centre for Advanced Genetic Studies.



## Poster Presentation at iCARE-hs Conference

Master Harishankar (M. Tech) and Ms. Sabitha Rani (Research Scholar) presented a poster at the "International Conclave on Artificial Intelligence & Robotics for Enabling Healthcare Singularity" (iCARE-hS 2024), jointly organized by the Digital University Kerala, Hridayalaya Heart and Robotic Research Centre, and the Genetika Centre for Advanced Genetic Studies, held at O by Tamara on April 21, 2024. The poster, titled "EEG-Based Imagined Speech Decoding with Hierarchical Deep Learning," clinched the 2nd prize and a cash award in the technical track.



## PUBLICATIONS

- Aiswarya S. Nair, Sabu M. Thampi, V. Jafeel, A post-quantum secure PUF based cross-domain authentication mechanism for Internet of drones, Elsevier Vehicular Communications, Volume 47, 2024, 100780, ISSN 2214-2096, <https://doi.org/10.1016/j.vehcom.2024.100780>.
- Nair, A., Pillai, Sini.V. and Senthil Kumar, S.A. (2024), "Towards emerging Industry 5.0 – a review-based framework", Journal of Strategy and Management, Vol. ahead-of-print. <https://doi.org/10.1108/JSMA-04-2023-0067>
- Elangovan K, " A Novel Triple-Slope-Based Digital Measurement Platform for 3-Wire Connected Resistive Sensors," in IEEE Transactions on Instrumentation and Measurement (Accepted for publication)
- Roopak S., Md. Meraj Uddin, Tony Thomas, Gokul Pradeep. (2024). Android Malware Detection Based on Informative Syscall Subsequences. IEEE Access. 10.1109/ACCESS.2024.3387475
- Amrutha Raj, V. and Malu, G. (2024), GAMNet: A Deep Learning Approach for Precise Gesture Identification, Journal of Intelligent & Fuzzy Systems, 1 Jan. 2024: 1 – 16. DOI:10.3233/JIFS-219395

## CONFERENCE

Parvathy Pavithran and Dr. Elizabeth Sherly presented a paper titled " An ASR model for Individuals with Hearing Impairment using Hidden Markov Model" at the 9th International Conference for Convergence in Technology (I2CT), held on 05th-07th April 2024, in Pune, India.



Raji Gopinath and Dr. Elizabeth Sherly presented a paper titled "Fostering Learning with Facial Insights: Geometrical Approach to Real-Time Learner Engagement Detection" at the 9th International Conference for Convergence in Technology (I2CT), held on 05th-07th April 2024, in Pune, India.



## INVITED TALK

- Dr. Anoop V. S. delivered a talk on "Generative AI for Business Leaders" at the Orientation Programme for the new MBA batch of Amrita AHEAD, organized by Amrita Vishwa Vidyapeetham, Kochi, India
- Dr. Anoop V. S. delivered a talk on "Generative AI and LLM Demystified" at the 14th three-day International Conference on Energy, Environment, and Health, organized by Sree Ayyappa College, Eramallikkara, Chengannur, Kerala, India, on 19th April 2024
- Tony Thomas delivered the talk, "Explainable and Trustworthy AI" at the FDP on Unleashing AI: A Roadway to an Intelligent Future, scheduled from April 1-5, 2024, at the College of Engineering, Perumon.
- Dr. Anoop V. S delivered a Keynote Address on "Generative AI for Natural Language Processing" at the 5th Student National Symposium organized by the University of Technologies and Applied Sciences, Oman.
- Dr. Sini V Pillai delivered the session on Technological Advancements and the Future of Higher Education at Travancore Engineering College on 3rd April 2024.

# ACHIEVEMENTS

## Secured First Place in Paper Presentation

Lakshmi Narayanan M, first-year MSc Machine Intelligence student from SoCSE. Participated in Mega Techno Fest (Yugam 2024), presented a paper at Kumaraguru Institution, Coimbatore and Secured First place out of 100+ teams across South India.



## ARTS PhD grant by Institut de Recherche pour le Développement (IRD)

Ms. Sadhvi Kwatra, PhD Scholar, working with Prof. I. Suresh, Chair, School of Informatics, has been awarded the prestigious ARTS PhD grant by Institut de Recherche pour le Développement (IRD) to visit Marine Biodiversity Exploitation and Conservation lab, Sète, France, for 6 months to carry out part of her PhD research work.



## Google Awarded the Hall of Fame

Google awarded the Hall of Fame along with a monetary reward for finding bug in their services. The Google Hall of Fame lists individuals who responsibly disclose security vulnerabilities or bugs to Google's security team. It's a recognition of prominent Ethical Hackers who improve the security and services of Google.

URL:<https://bughunters.google.com/profile/559ed4bb-8be7-424f-b427-8cf572e1d47b/awards>



# Congratulations



## STUDENT COUNCIL 2024-25



**Arun Raj T**  
Rep PhD



**Anila Wilson**  
Treasurer  
Rep MBA



**Mohammed Hashim K M**  
Rep Placement cell



**Abhiram S**  
Sports Secretary  
Rep MSc



**Sohan G**  
General Secretary  
Rep SoDS



**Malavika Pradeep**  
Arts Secretary  
Rep MTech



**Himanshu**  
Rep SoCSE



**Sai Shankar G Nair**  
Rep Sol



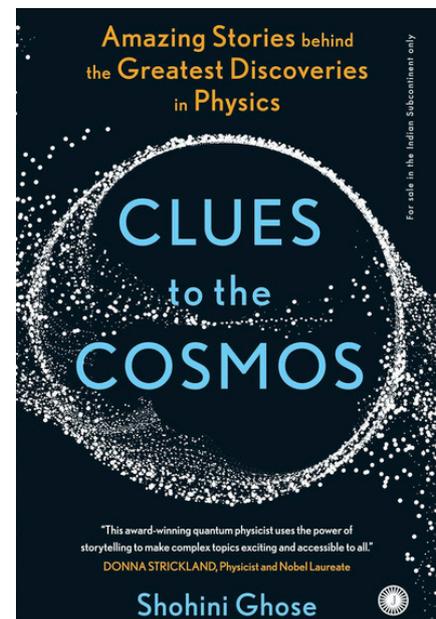
**Amal C Rajesh**  
Rep SoESA



**M S Krishna**  
Rep SoDHLLA

## Clues to the cosmos: Amazing stories behind the greatest discoveries in Physics

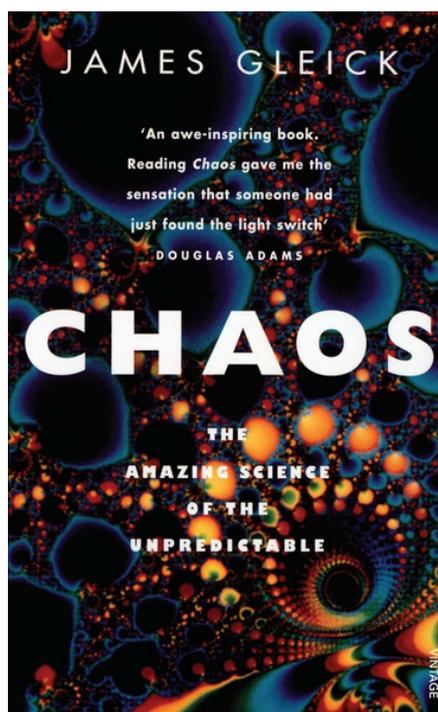
Amazing Stories behind the Greatest Discoveries in Physics Set out on the ultimate detective story—the story of how we unravelled the great mysteries of nature through science. From the microscopic world of an electron to the very limits of the universe, scientists have collected the clues left all around us in nature, and constructed a story that best fits all of the evidence. And what a story it is! A tale of explosive beginnings in the big bang, the strange warping of space and time, black holes, quantum uncertainties and elusive particles. How did we come to understand this grand story? This book explains the science and the scientific process that led to the biggest discoveries in physics. Like all great detective stories, it involves careful investigation, surprising discoveries, interesting characters, twists and turns, leaps of imagination and rewarding outcomes.



Source: Amazon

Ghose, Shohini(2020)Clues to the cosmos: Amazing stories behind the greatest discoveries in Physics. Mumbai, Jaico Publishing House

## Chaos: Making a new science



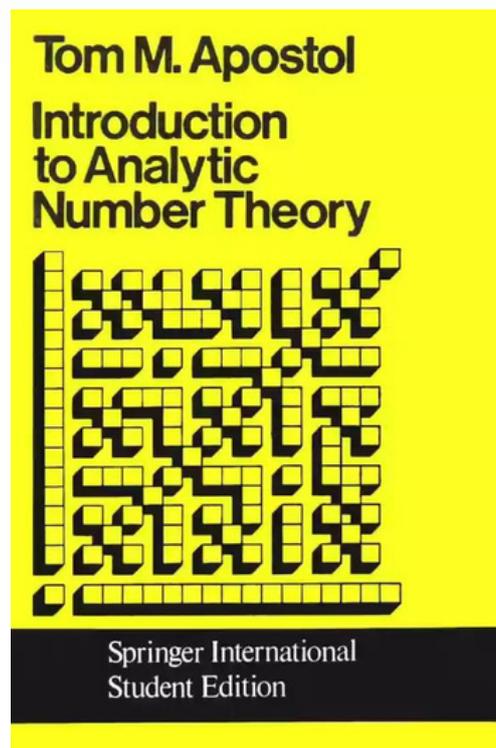
A work of popular science in the tradition of Stephen Hawking and Carl Sagan, this 20th-anniversary edition of James Gleick's groundbreaking bestseller Chaos introduces a whole new readership to chaos theory, one of the most significant waves of scientific knowledge in our time. From Edward Lorenz's discovery of the Butterfly Effect, to Mitchell Feigenbaum's calculation of a universal constant, to Benoit Mandelbrot's concept of fractals, which created a new geometry of nature, Gleick's engaging narrative focuses on the key figures whose genius converged to chart an innovative

Source: Empire Book Store

Gleick, James(1998) Chaos: Making a new science. London, Vintage Books

## Introduction to Analytic Number Theory

This is the first volume of a two volume textbook which evolved from a course (Mathematics 160) offered at the California Institute of Technology during the last 25 years. It provides an introduction to analytic number theory suitable for undergraduates with some background in advanced calculus but no previous knowledge of number theory. Actually, a great deal of the book requires no calculus at all and could profitably be studied by sophisticated high school students. Number theory is such a vast and rich field that a one[year course cannot do justice to all its parts. The choice of topics included here is intended to provide some variety and some depth. Problems which have fascinated generations of professional and amateur mathematicians are

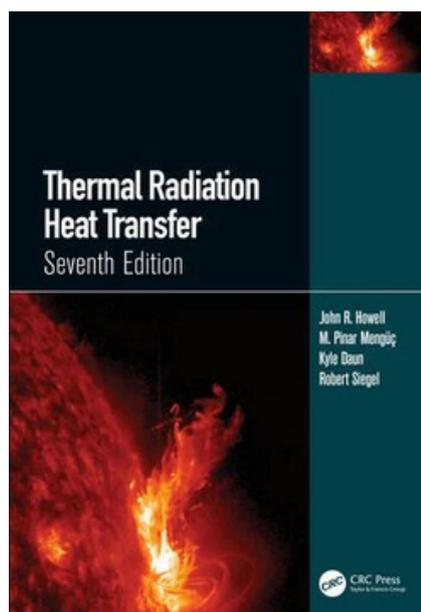


discussed together with some of the techniques for solving them. One of the goals of this course has been to nurture the intrinsic interest that many young mathematics students seem to have in number theory and to open some doors for them to the current periodical literature.

Source: Caltech Authors

Apostol, Tom M(1998)Introduction to Analytic Number Theory. New Delhi, Narosa Publishing House.

## Thermal Radiation Heat Transfer



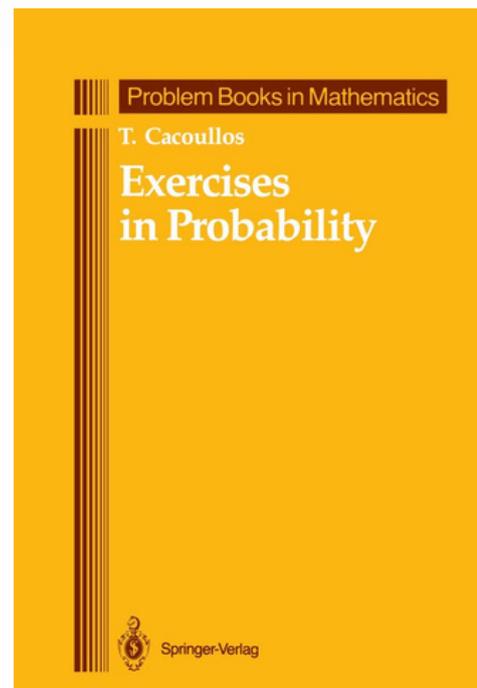
The seventh edition of this classic text outlines the fundamental physical principles of thermal radiation, as well as analytical and numerical techniques for quantifying radiative transfer between surfaces and within participating media. The textbook includes newly expanded sections on surface properties, electromagnetic theory, scattering and absorption of particles, and near-field radiative transfer, and emphasizes the broader connections to thermodynamic principles. Sections on inverse analysis and Monte Carlo methods have been enhanced and updated to reflect current research developments, along with new material on manufacturing, renewable energy, climate change, building energy efficiency, and biomedical applications

Source: Routledge

Howell, John R | Mengüç, M. Pinar | Daun, Kyle | Siegel, Robert(2021)Thermal Radiation Heat Transfer Boca Raton, CRC Press.

## Exercises in Probability: Problem Books in Mathematics

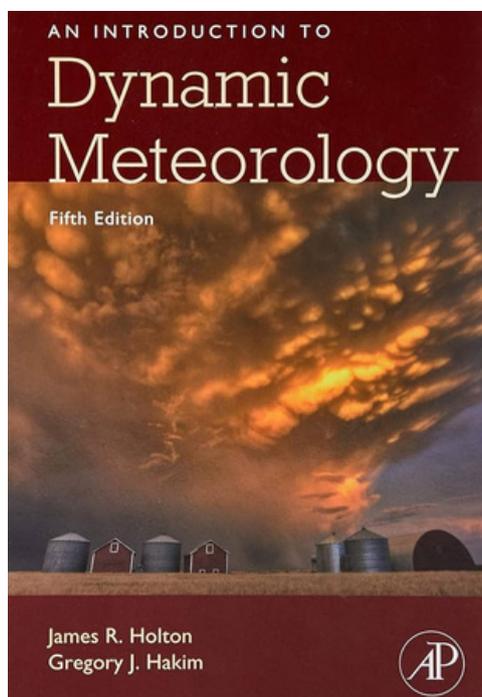
The author, the founder of the Greek Statistical Institute, has based this book on the two volumes of his Greek edition which has been used by over ten thousand students during the past fifteen years. It can serve as a companion text for an introductory or intermediate level probability course. Those will benefit most who have a good grasp of calculus, yet, many others, with less formal mathematical background can also benefit from the large variety of solved problems ranging from classical combinatorial problems to limit theorems and the law of iterated logarithms. It contains 329 problems with solutions as well as an addendum of over 160 exercises and certain complements of theory and problems.



Source: Amazon

Cacoullos, T(1989)Exercises in Probability: Problem Books in Mathematics. New York, Springer.

## An Introduction to Dynamic Meteorology



During the past decade, the science of dynamic meteorology has continued its rapid advance. The scope of dynamic meteorology has broadened considerably. Much of the material is based on a two-term course for seniors majoring in atmospheric sciences.

This book presents a cogent explanation of the fundamentals of meteorology and explains storm dynamics for weather-oriented meteorologists. It discusses climate dynamics and the implications posed for global change. The new edition has added a companion website with MATLAB exercises and updated treatments of several key topics.

Source: Amazon

Holton, James R| Hakim, Gregory J(2013)An Introduction to Dynamic Meteorology. Amsterdam, Academic Press.

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