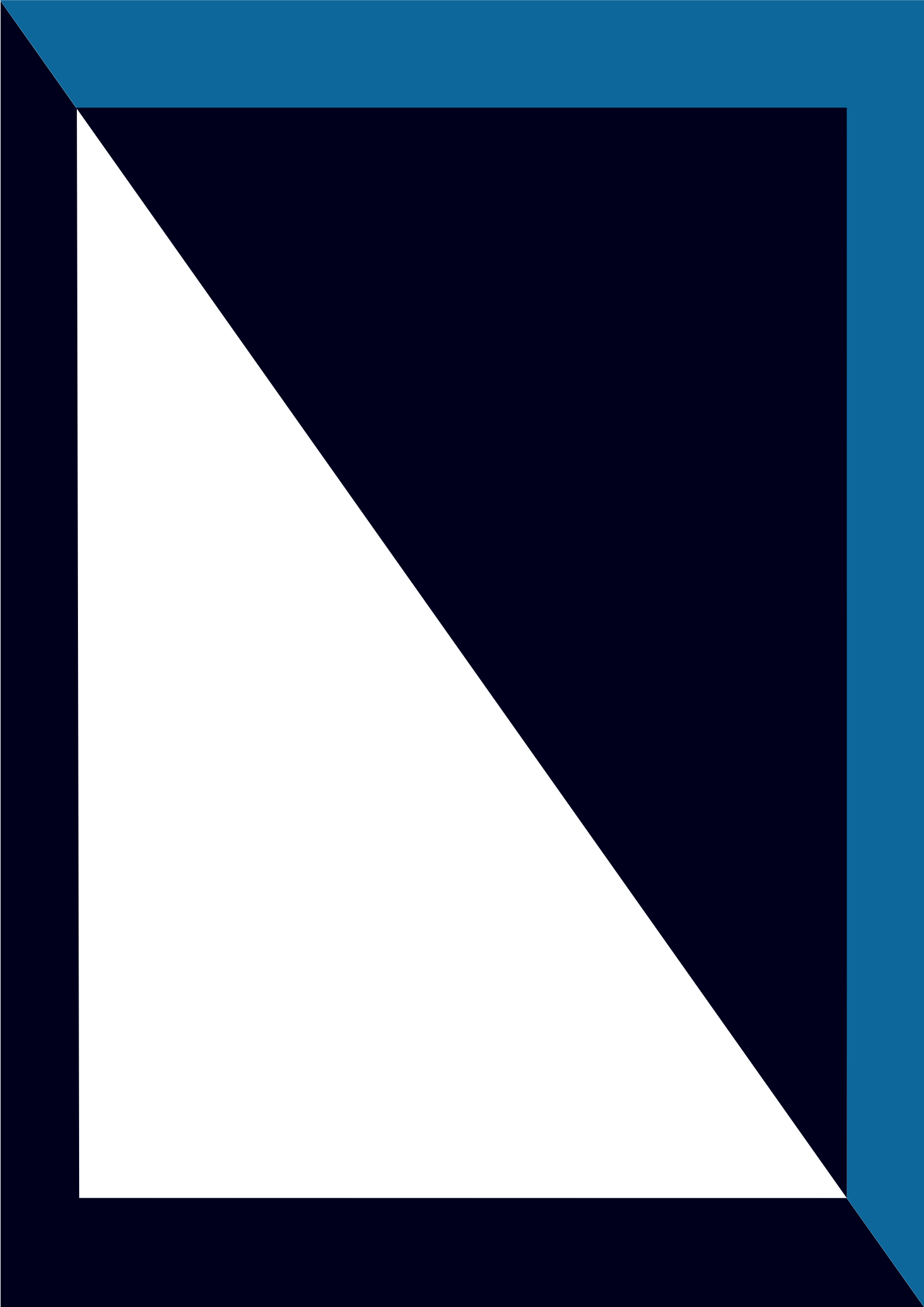

Introduction

The International Bhurban Conference on Applied Sciences & Technology is a unique scientific event which offers exciting opportunities of sharing knowledge and experiences by bringing together academicians, researchers and professionals from different parts of the world at this interdisciplinary conference. To keep abreast with rapid advancements in the fields of Applied Sciences and Technologies, IBCAST is promoting new horizons of research and applications and also making them accessible to experts in need for industrial and economic growth of the country. This conference has been successful in providing a forum to participants from advanced and developing nations to discuss the practical problems, challenges and the solutions available in the field of their research.

Since 2002, the IBCAST is being held consecutively in the vicinity of Islamabad, Pakistan. Until the year 2005 four technological tracks – Advanced Materials, Fluid Dynamics, Control & Simulation and Wireless Communication & Radar were covered. Progressively, new tracks on Aerostructures, Artificial Intelligence & Software Technologies, Biosciences, Cyber Security, Medical Sciences and Underwater Technologies were added. More than 14000 scholars, scientists and engineers from different universities and technical organizations have benefitted from IBCAST. During these conferences more than 3100 research papers have been contributed.

Up to now nineteen conferences have been hosted by the CESAT which is a premier setup of Centres of Excellence in Science and Applied Technologies in Pakistan.

This year IBCAST invites original contributions from authors describing unpublished research work on the topics of following tracks

- Advanced Materials (AM)
- Aerostructures (AS)
- Artificial Intelligence & Software Technologies (AI & ST)
- Biosciences (BS)
- Control & Signal Processing (CSP)
- Cyber Security (CS)
- Fluid Dynamics (FD)
- Medical Sciences (MS)
- Underwater Technologies (UT)
- Wireless Communication & Radar (WCR)

Special sessions and workshops on selected topics will be organized as well.

Scientific Committee

- **Advanced Materials**
  Dr. Naveed A. Siddiqui
  Dr. Mazhar Iqbal
- **Aerostructures**
  Dr. Abdur Rauf
  Dr. Naeem Zafar
- **AI & Software Technologies**
  Dr. Usman Qayyum
  Dr. Tahir Jameel
- **Biosciences**
  Dr. Saifullah Khan
  Dr. Irfan Ali
- **Control & Signal Processing**
  Dr. Sajjad Asghar
  Dr. Awais Akhtar
- **Cyber Security**
  Dr. Mureed Hussain
  Dr. Shiraz Ahmad
- **Fluid Dynamics**
  Dr. Muhammad Rafique
  Dr. Busharat Ali Haider
- **Medical Sciences**
  Dr. Ayesha Waqar Niazi
  Dr. Zeeshan Perwaiz
- **Underwater Technologies**
  Dr. Shafiq ur Rehman
  Syed Ali Abbas
- **Wireless Communication & Radar**
  Dr. Naveed Ahsan
  Dr. Abdul Mueed

Conference Venue

Murree is situated on the southern slopes of the Western Himalayan foothills. It is a popular hill station with glorious view of lush green landscapes and mountains. Tourist attractions around Murree include Kashmir Point, Patriata, Dunga Gali Pine Line Track, Bhurban and Nathiagali resorts.

Venue of Medical Sciences track is Islamabad.

Paper Submision

All submissions will pass through the blind review process by the committee of experts in each track of the conference. Papers can be submitted through EasyChair which is accessible from:

https://easychair.org
https://www.ibcast.org.pk

Accepted and presented papers **(except the medical Sciences track)** will be published in the IEEE IBCAST Conference Proceedings and submitted to IEEE Xplore.

Registration Fee

- Rs. 15,000
  Pakistani Participants & CESAT Speakers
- Rs. 10,000
  MS Track Participants
- Rs. 8,000
  Students from Pakistani Universities
- $ 500 USD
  Foreign Participants
- $ 300 USD
  Students from Foreign Universities

IEEE members will be discounted by 20%

Accommodation

Accommodation to invited speakers and foreign delegates will be provided for the entire conference duration. Whereas, the contributed paper presenters from Pakistani Institutes will be facilitated for their presentation day only.

1. Advanced Materials:

Developments of new materials and improving the existing materials, to obtain better characteristics, are essential for emerging technologies and it have always been main focus of the researchers. It is evident by innumerable publications appearing in scientific journals on Advancement in Materials and their applications every year.

- Fatigue Life and Damage Tolerance
- Structural Optimization
- Bio-mechanics
- Advanced Manufacturing Techniques
- Advanced Testing Techniques
- Structural Reliability Analysis
- Joints & Interfaces Design
- Structural Health Monitoring (SHM)
- NDI for Composites
- Wave and Wind Loading
- Case Studies for Failure of Aero-Structures
- Design of Thin Walled Structures
- Model Correlation and Updating
- FSI and Aero-Thermal Heating
- Sub-structuring and Multi-scale Modeling
- Multi-Body Dynamics
- Morphing Technology

3. Artificial Intelligence & Software

- Quantum Machine Learning & Tiny ML
- Brain intelligence Understanding (Neuro-cognition)

Software Technologies

- Requirements Engineering and Risk Assessment
- Algorithms Design and Evaluation
- Software Testing, Verification and Reliability
- Model Driven Development/Model Driven Architecture
- DevOps, Agile Development, Agent Oriented Software Engineering
- Design Patterns, Architecture and Frameworks
- Formal Methods and Verification
- Software Quality Assurance and Process Improvement
- Internet of Things (IoT) and Embedded Systems
- Software Economics, Measurements and Quality Metrics
- Automatic Functional and Non-functional Testing

4. Biosciences:

Biosciences track aims to bring together leading academic scientists, researchers and scholars to exchange experiences and research results on different aspects of "Bio-surveillance, Microbial Detection & Countermeasures". Objective is to explore the collaborations and spark ideas with the aim of developing new projects and technologies. The sub themes include:

- Components and Tools of Effective Bio-surveillance Program
- Bio-surveillance Utility, Effectiveness and Challenges
- Sample Collection Process, Analysis Interpretation, Data Dissemination
- GIS Mapping and Disease Prediction Modeling
- Zoonotic & Vector borne Emerging / Re-emerging Infectious Diseases and Contributing Factors.
- Biological Risk Assessment
- Recent Innovations, Trends, Concerns and Practical Challenges in Lab and Fields based Bio-detection Technologies.
- Advancement in the Treatment, Vaccine Development, Control/ Prevention of Microbes and their Vectors
- Predictive Disease Modeling
- Biosensors' Development

5. Control & Signal Processing:

The importance of Control & Signal Processing in modern world cannot be over emphasized. Control Systems are seen at work in small and household appliances, large scale industrial plants, very sophisticated and complex autonomous aerospace systems and vehicles. Control system technology has thus driven the engineers to operate at peak of

performance computers and microprocessors has opened up possibilities of design and realization of innovative and more effective control algorithms. It significantly increases capability and performance of control systems. Thus low cost quality products can be designed and realized by alleviating the need for expensive instrumentation and costly components.

Signal processing technique have numerous applications in various contemporary fields such as telecommunication, quantum computing, spectral imaging, video and image processing, sonars, biomedicine, computer vision and seismology. Innovative and powerful algorithms have been developed and implemented in real-time applications on configurable integrated circuits and high performance new generation computers.

The Control and Signal Processing track provides a platform for scientists, engineers and students from universities and industries around the world to presents their research work and innovative ideas to strengthen relations between academia and the industry. Papers of interest include those that describe theory, analytical techniques and latest technological developments.

Topics to be covered in this activity include, but not limited to:

Control

- Aerospace Systems Control
- Nonlinear Systems and Control
- Systems Identification and Adaptive Control
- Optimization and Model predictive control
- Variable Structure and Sliding Mode Control
- Advanced Filtering Techniques
- Multi-sensors Data Fusion
- Fault Diagnostics, Detection and Isolation
- Fault-Tolerant Control
- Guidance, Navigation and Control of Autonomous Systems
- Cooperative Guidance & Control of Autonomous Multi-Agents Formation
- Artificial Intelligence in Guidance, Navigation and Control
- Hardware in the Loop Simulations of Autonomous Systems
- Manufacturing Automation and Robotic control
- Dynamic Modeling and Control of Aero Engines
- Control of Renewable Power Generation Systems and Smart Grids
- Process Control of Chemical and Biological Systems
- Quantum Systems and Control

Signal Processing

- Computer Vision and Graphics
- Statistical Methods and Learning Algorithms
- Remote sensing

- Big data and Image/ Audio / Text/ Analytics
- Pattern Recognition, Bagging and Boosting Classifiers
- Image Recognition and Tracking
- Medical Imaging
- DSP Related RTOS Issues
- Multidimensional Signal Processing and Speech Recognition
- Sensor Networks
- Hyper spectral and Multi-Spectral Imaging
- Robotic Perception
- 3D Point Cloud Sensing and Processing
- Video Processing and Compression
- Algorithmic Implementation on FPGA/ ASIC/ Embedded Systems
- Quantum Signal Processing
- Signal Processing for Big Data
- Statistical Learning
- Applications of Machine Learning

Special Session on IC DESIGN: This session aims papers on advances in IC design and systems-on-chip.

6. Cyber Security:

The continuous growth of cyber threat landscape in an ever increasing digital world demands investments in cyber security technologies, strong procedures and infrastructures. It is important that research and frameworks for protecting information match the rapid pace of the evolution of the digital platforms and associated evolving cyber threats. Without robust cyber security measures, the consequences of cyber-attacks can be devastating, leading to financial losses, reputational damage, and even loss of lives. In essence, cyber security is a fundamental aspect of 21st century's digital revolution and an indispensable element of the daily life.

The objective of this track is to facilitate collaboration among researchers involved in various aspects of cyber security, with the goal of making significant strides in this field of knowledge and addressing real-world challenges. The track emphasizes research areas that are relevant to current and emerging trends in cyber security with high focus on application of the latest concepts, techniques, and technologies. These areas include the IoT, Big Data, AI applied to Cyber Security, Software Defined Networks, Blockchain Cryptocurrency, and more. Although not exhaustive, the topics of interest include:-

- Emerging Cyber Threats
  (Ransomware, Phishing, ATPs and Malware Attacks)
- Threat Intelligence and Incident Response
- Security of Cyber-Physical Systems
- Digital Forensics
- Data Loss Prevention Techniques

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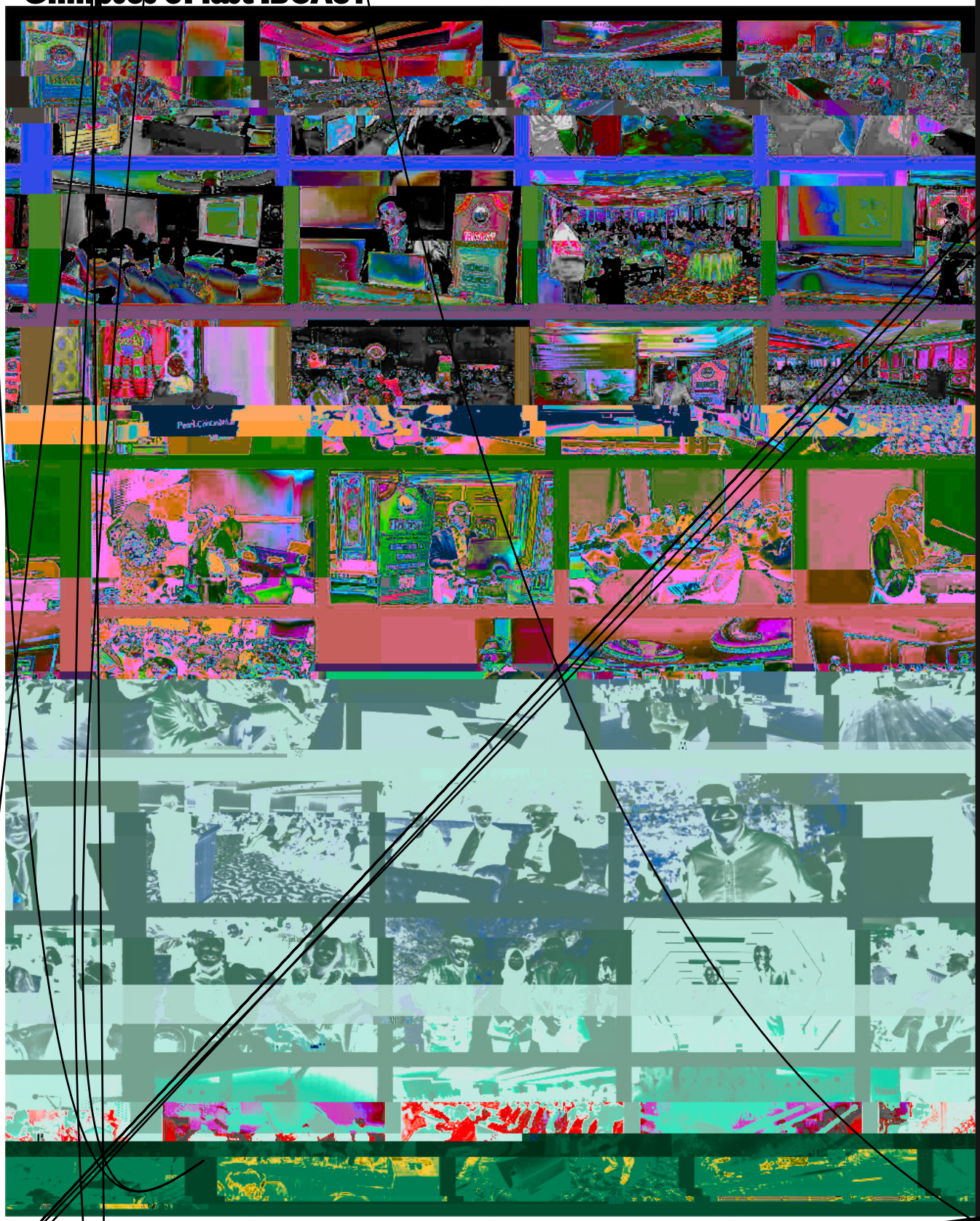
Glimpses of last IBCAST



Participation Application Form

Latest Photograph

Copy of CNIC (Front Side)

Copy of CNIC Back Side

Dr/Mr/Ms: Name:

CNIC: - Passport:

Date of Birth Nationality:

Email: Country of Origin:

Mob: Landline: Fax:

Mailing Address:

EDUCATIONAL

University	Highest Degree	Year	Subject

OCCUPATION

Institution	Post	Period

TRACKS OF INTEREST (Select three tracks with priority)

- ☐ Advanced Materials
- ☐ Aerostructures
- ☐ AI & Software Technologies
- ☐ Biosciences
- ☐ Control & Signal Processing
- ☐ Cyber Security
- ☐ Fluid Dynamics
- ☐ Medical Sciences*
- ☐ Underwater Technologies
- ☐ Wireless Communication & Radar

*Venue of Medical Sciences track is Islamabad

PAPER PRESENTER Yes ☐ No ☐

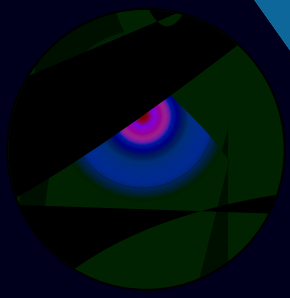
Paper Title:

IBCAST Track: Paper ID:

REGISTRATION FEE

Pakistani Participants & CESAT Speakers	Rs. 15,000
MS Track Participants	Rs. 10,000
Students from Pakistani Universities	Rs. 8,000
Foreign Participants	$ 500 USD
Students from Foreign Universities	$ 300 USD

Last Date of Application for Participation is 30th June, 2023



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