

**Joint Conference of ICTACEM 2021,
APCATS 2021, AJSAE 2021 and AeSI 2021**

<http://www.ae.iitkgp.ac.in/ICTACEM2021/>



**8th International Conference on Theoretical, Applied, Computational
and Experimental Mechanics (ICTACEM'2021) Since 1998**
&
11th Asian-Pacific Conference on Aerospace Technology and Science (APCATS'2021)
&
6th Asian Joint Symposium on Aerospace Engineering (AJSAE'2021)
&
AeSI, Kolkata Chapter National / International Conference (AeSI'2021)



December 20 - 22, 2021 (Monday to Wednesday) Vikramshila
Complex, Indian Institute of Technology Kharagpur, Kharagpur,
West Bengal, India. Pin – 721 302

ICTACEM

The International Conference on Theoretical Applied Computational and Experimental Mechanics is organized every three years by the Department of Aerospace Engineering IIT Kharagpur. The conference is devoted to providing a platform for scientists and engineers to exchange their views on the latest developments in Mechanics since 1998. ICTACEM Conference is aimed at bringing together academicians and researchers working in various disciplines of mechanics to exchange views as well as to share knowledge between people from different parts of the globe. The 8th ICTACEM will be held from December 20-22, 2021 at the Indian Institute of Technology, Kharagpur.

APCATS

The APCATS is held every two years aimed at discussing the latest developments in aerospace technology and science. The conference provides a platform for scientists and engineers to discuss state-of-the-art ideas, methods, and results, in order to promote the exchanges and collaborations between different disciplines and nations, especially in Asian-Pacific area.

AJSAE

The AJSAE is held every year and provides an opportunity for scientists and engineers to discuss the state-of-art ideas, methods, and results in aerospace science and technology, and to promote the exchanges and collaborations between different disciplines and nations, especially in Asian area.

AeSI

Aeronautical Society of India (AeSI) was founded on November 17, 1948 by Pandit Jawaharlal Nehru, the first Prime Minister of India who then became the first Chief Patron of the Society. The main motto of AeSI is to promote the advancement and dissemination of knowledge of Aeronautical and Aerospace Science/Technology and also to strive for the elevation of Aeronautical and Aerospace professions. The Kolkata chapter of AeSI organizes a national/international conference every year and is co-organizing the conference with ICTACEM 2021, APCATS 2021 and AJSAE 2021.

THEMES

The conference is focused on current research trends in all disciplines of mechanics including interdisciplinary areas. The topics include (but not limited to):

1. Fluid mechanics

Experimental and Computational Aerodynamics, Experimental and Computational Fluid Mechanics, Seepage Flow, Computational Mechanics, Computational Methods, Shock-Boundary Layer Interactions, Active and Passive Flow Controls, Fluid-structure interaction, High Enthalpy Flows and Hypersonic Aerodynamics, biomechanics, Bio-inspired mechanics, Aeroacoustics, Hydrodynamics, Turbulence, LES *etc.*

2. Solid mechanics and Dynamics

AI and Expert Systems, Classical Mechanics, Composite Materials and Structure, Computational Mechanics, Computational Methods, Damage Mechanics, Fracture Mechanics, Functionally Graded Materials, Fuzzy Logic, Genetic Algorithms and Neural Networks, Modelling and Simulation, Nano mechanics, Nonlinear Mechanics, Optimization, Smart Materials, Structures and Systems, Structural Dynamics, Aeroelasticity, Terramechanics, Uncertainty Quantification *etc.*

3. Flight mechanics, Control and Navigation

Space/Orbital Mechanics, UAV, MAV, AI and Expert Systems, Fuzzy Logic, Genetic Algorithms and Neural Networks, Satellite-Based Navigation Systems, Optimal, Non-linear and Robust control.

4. Propulsion and Combustion

Turbomachinery, Aerodynamics of gas turbine components, Development and Testing of Gas Turbine Systems, Heat transfer, Gas turbine blade cooling, rotor dynamics, Performance Analysis and Advanced Cycles, Droplet and spray combustion, Laser ignition, Combustion spectroscopy, LES of combustion, Alternative fuels, Non-conventional energy, Nano-fuels, Technology Development in Solid/Liquid/Hybrid Rockets, *etc.* Statistical Thermodynamics, Uncertainty Quantification.

CALL FOR PAPERS

Authors are invited to **SUBMIT** extended abstracts (maximum two pages) of their papers **ONLINE** indicating clearly the summary of the aims, methods of analysis, results and conclusions. The official language for the conference is English. The final acceptance of a paper will be based on the review of the extended abstract and will be available as a list of Accepted Papers on the website. Format for the preparation of the **extended abstract** and the **full length paper** are available as separate links on the conference website.

NOTE

- Extended Abstracts should not exceed **TWO** pages as per the proposed format.
- Full length paper is limited to 10-12 pages as per the proposed format.

PROCEEDINGS

The E-proceedings along with the print copy of the book of abstracts will be published and included in the conference kit for all the registered participants.

PUBLICATION

Selected papers may be considered for publication with an internationally recognized publisher/Reputed Journal/Journals.

MODE OF CONFERENCE

Presentation will be through physical participation at the conference venue. However, the presentation may have to be conducted remotely in case of any exigency. The Registration Fees will be accordingly modified and notified through the website.

IMPORTANT DATES

1. Opening of Extended abstract submission for paper (online): **April 01, 2021**
2. Deadline for Submission of Extended Abstract (online): **September 15, 2021.**
3. Extended Abstract Acceptance Notification: **September 20, 2021.**
4. Deadline for Submission of Final Full Length Paper (online): **November 22, 2021.**
5. Registration Deadline (payment of registration fees): **November 30, 2021.**
6. Conference dates: **December 20-22, 2021.**

ACCOMMODATION

Accommodation will be arranged in the guest houses on request located within the Institute campus on single/sharing basis based on the availability.

Note: No accommodation is guaranteed after the registration deadline of October 31, 2021.

I.I.T. Kharagpur Campus

Kharagpur - a town in eastern India, famous until 1950 as home to the longest railway platform in the world - became the nursery where the seed of the IIT system was planted in 1951. IIT Kharagpur started its journey in the old Hijli Detention Camp once where some of the country's great freedom fighters were held by the colonial government. Spurred by the success of IIT Kharagpur, four younger IITs came up around the country in the two following decades, and from these five came thousands of IITians, the brand ambassadors of modern India. It was the success of this one institution at Kharagpur that wrote India's technological odyssey.

The Institute takes pride in its relentless effort to provide the best platform for both education as well as research in the areas of science and technology, infrastructure design, entrepreneurship, law, management, and medical science and technology. IIT Kharagpur is not just the place to study technology, it is the place where students are taught to dream about the future of technology, be innovative and to strive to make the world a better place.

REGISTRATION FEES

The registration fees for the Conference are as follows:

| Delegates from SAARC Countries: | | |
|--|----------------------------------|---------------------------------|
| | Before September 30, 2021 | After September 30, 2021 |
| Educational Institutions | Rs. 4,000 | Rs. 5,000 |

| | | |
|--|-----------|-----------|
| Research Organisations/Industries | Rs. 5,000 | Rs. 6,000 |
| Students | Rs. 1,000 | Rs. 1,250 |
| Delegates from Other Countries: | | |
| Educational/Research Institutes | US\$ 225 | US\$250 |
| Students | US\$ 50 | US\$ 62.5 |

The original regular registration fee (USD \$450) was intended to cover a copy of the conference proceedings, inaugural reception, breakfasts, lunches and tea/coffee services during session breaks and conference banquet including other cultural programs and other miscellaneous costs.

Since the ICTACEM2021 is now being organized online, the reduced registration fees are as mentioned above. The conference committee will decide in due course of time about the distribution of e-proceedings of the conference.

MODE OF PAYMENT

Kindly use the link <https://erp.iitkgp.ac.in/CEP/courses.htm>

Click on How to Pay?

Then select program id:

IIT/CEP/CON/CON/2020-2021/AE/110

Once the manuscript is accepted for oral/poster presentation in the conference, the author will receive an email for making fee payment from the ERP system of IIT Kharagpur.

SECRETARIAT OF JOINT CONFERENCE OF ICTACEM, APCATS, AJSAE AND AESI, KOLKATA

Prof. V. K. Tewari, Patron, Director, IIT Kharagpur

Mr. A. S. Kiran Kumar, Patron, President, AeSI, New Delhi, Ex-Chairman, ISRO

Prof. M. Sinha, Mentor, HoD, Department of Aerospace Engineering, IIT

Kharagpur Gp. Capt. T. K. Ray, Mentor, Chairman, AeSI, Kolkata

Prof. K. P. Sinhamahapatra, Conference Chair, Department of Aerospace Engineering, IIT Kharagpur, ictacem@aero.iitkgp.ac.in

Prof. C. D. Kong, Conference Chair, International Visiting Professor, Department of Aerospace Engineering, IIT Kharagpur, cdgong@aero.iitkgp.ac.in

Prof. B. N. Singh, Conference Vice-Chair, Department of Aerospace Engineering, IIT Kharagpur, ictacem@aero.iitkgp.ac.in

Prof. Amar Nath Mallick, EC Member, AeSI, Kolkata Chapter & Professor, Department of Mechanical Engineering, NIT, Durgapur, amarnath.mullick@me.nitdgp.ac.in

INTERNATIONAL COMMITTEE OF JOINT CONFERENCE OF ICTACEM, APCATS, AJSAAE AND AeSI, KOLKATA

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Korea Prof. S. S. Lee, Honorary Co-Chair; Gyeongsang National University,

Korea Prof. J. H. Hwang, Honorary Co-Chair. Korea Aerospace University,

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INTERNATIONAL REPRESENTATIVES

Prof. D. K. Maiti, IIT Kharagpur, dkmaiti@aero.iitkgp.ac.in

Dr. C. Y. Hwang, Korea Aerospace Research Institute, cyhwang@kari.re.kr

Prof. Shenyan Chen, Beihang University, chenshenyan@buaa.edu.cn

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Prof. J. L. Tsai, National Chiao Tung University, jjalin@mail.nctu.edu.tw

Prof. Mahir Dursun, Gazi University, mdursun@gazi.edu.tr

VENUE: Vikramshila Complex, IIT Kharagpur, West Bengal, India

**ICTACEM 2021 LOCAL ORGANIZING
COMMITTEE ICTACEM Secretariat**

| | |
|---|--|
| Patron | Prof. V K Tewari, Director, IIT Kharagpur |
| Mentor | Prof. M Sinha, Head of the Department, Aerospace Engineering |
| Chairman | Prof. K P Sinhamahapatra ictacem@aero.iitkgp.ac.in |
| Vice-Chairman | Prof. B N Singh ictacem@aero.iitkgp.ac.in |
| Secretary Fluid Mechanics | Prof. A Roy |
| Joint Secretary Fluid Mechanics | Prof. S M Dash |
| Secretary Flight Mechanics, Control and Navigation | Prof. M K Laha |
| Joint Secretary Flight Mechanics, Control and Navigation | Prof. S Bhattacharyya |
| Secretary Propulsion & Combustion | Prof. Amardip Ghosh |
| Joint Secretary Propulsion & Combustion | Prof. S Karmakar, Prof. C S Mistry |
| Secretary Solid Mechanics and Dynamics | Prof. B N Singh |

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|--|---|
| Joint Secretary Solid Mechanics and Dynamics | Prof. M R Sunny |
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| Joint Secretary International relations & Sponsorship | Prof. P Jana |
| Secretary Media & publication Secretary Finance | Prof. S Saha, Prof S Hota Prof. R Joarder, Prof. A Prakash |

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|------------------|---|
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| Flight Mechanics | Prof. N K Payada, Prof S Bhattacharyya |
| Propulsion | Prof. S Karmakar, Prof. C S Mistry, Prof. Amardip Ghosh |
| Structures | Prof. Anup Ghosh, Prof. Mira Mitra |

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TRANSPORTATION COMMITTEE

Prof. Amardip Ghosh and Mr G. Karmakar

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Prof. R. Joarder, Prof. M. Kaushik and Mr. S. Sikdar.

RECEPTION DESK

Prof. A. Prakash, and Mr. B Maiti

COMPUTER, AUDIO VISUALS

Mr. R. Nandi

OFFICE AND POSTAL WORK AND

REIMBURSEMENTS Mr. S. Santra and Mr. U. Sarkar.

POSTAL / EMAIL COMMUNICATION

Chairman, ICTACEM 2021

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