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Director, IIT (BHU), Varanasi

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About the City

The holy city of Varanasi is known as the city of temples and learning. It is a place of great historical and cultural importance. This religious capital of India is situated on the bank of the holy river Ganges and is famous for temples of Lord Shiva, Buddha (at Sarnath) and Sankat Mochan etc. Varanasi is the premiere most place of oriental learning also. Simultaneously it is keeping pace with modern advanced knowledge. The city is reputed for silk fabrics, perfumes, artistic brass and copper wares and a variety of handicrafts. This vibrant city with multiple dimensions of knowledge and liberation has a magnetic attraction for people all over the world.

IIT(BHU) Varanasi

The Indian Institute of Technology (Banaras Hindu University), Varanasi owes its existence to the farsighted vision and relentless efforts of the founder Mahamana Pandit Madan Mohan Malaviya ji who created the first comprehensive residential university of India. Three engineering and technological institutions were established viz the Benaras Engineering College(BENCO) in 1919, the College of Mining and Metallurgy (MINMET) in 1923, and the College of Technology (TECHNO) in 1932 as the constituent units of Banaras Hindu University. The first ever Bachelor degree course in Electrical, Mechanical, Metallurgy, Mining, Ceramics and Pharmaceutics in India were pioneered at BHU while Pharmaceutics also being the first in Asia. After country's independence in 1947, post graduate and doctoral research programmes were also introduced here. These colleges produced outstanding engineers who led various indigenous industries, academic institutions and R&D laboratories both within and outside the country. The three engineering colleges were merged to form the Institute of Technology (BHU) in 1968. The erstwhile IT(BHU) has been converted into IIT(BHU) Varanasi wef 29th June, 2012. Since then IIT (BHU) is witnessing realization of several significant academics, research and developmental programmes and new initiatives in all spheres of the Institute.

About the Department

The Department of Mathematical Sciences, IIT (BHU) earlier known as Mathematics / Applied Mathematics has been functioning since 1968. Its importance lies in the fact that it caters to the needs of the undergraduate as well as post-graduate students of the Institute. In addition, the Department runs its own 5-year Dual Degree (B Tech & M Tech) programme in Mathematics & Computing. Computing is the glamour of the Department. It annexes several dimensions in terms of new and growing areas of research and further facilitates simulation of mathematical models constructed for interdisciplinary areas.

International Workshop on Fractional Derivatives: Theory & Computations with Applications (FDTCA 2021)

November 12-14, 2021

Online Workshop

Organized by
Department of Mathematical Sciences
Indian Institute of Technology (BHU) Varanasi

Organizer

Dr. Rajesh K. Pandey
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Please visit the following link for the registration:
https://forms.gle/LhDJNVnV78LP1aN4A

For more information, please visit
https://conferences.iitbhu.ac.in/FDTCA2021/

International Workshop on Fractional Derivatives: Theory & Computations with Applications (FDTCA 2021)

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Introduction & objectives of the workshop

The idea of fractional calculus (FC) is as old as traditional calculus. It was formulated in 1695, shortly after the development of classical calculus, and the original question that led to the name fractional calculus was: Can the meaning of a derivative of integer order be extended to have a meaning when it is a fraction? Since then, several mathematicians contributed to the development of FC, including Riemann, Liouville, Abel, Grunwald, Letnikov, Weyle and Riesz. Until recently, research on FC was confined to the field of mathematics. However, in the last two decades, many applications of FC in various fields of engineering, science, mathematics, bioengineering and economics have been found. As a result, FC has become an important topic for researchers in various fields.

This workshop is the part of the SERB CRG/2018/002654 project sanctioned to the organizer. The principal goal of this workshop is to present a systematic introduction to the fractional derivatives and fractional PDEs, and its need to the current research areas including real life applications. Further, some problems of interest from science and engineering will be addressed. The participants will be introduced to computational and analytical methods for the problems in fractional variational calculus such as fractional variational problems, problems in fractional control and solving fractional differential equations. The applications of the fractional derivatives in the area of image/signal processing will also be addressed. To conclude, some problems will be outlined, and challenges involved in solving them will be discussed, motivating young faculty members/ Postdoctorals/Ph.D. students to engage in research problems in this rapidly developing area of research. Few lab sessions will also be conducted.

This workshop will provide a forum to faculty members and young researchers to interact with eminent speakers and to enhance their cognizance in the field of fractional derivatives: Theory & Computations with applications in science and engineering. Further, this will allow communication of intra and inter disciplinary ideas and will result in acceleration of new collaborations of applied mathematicians, numerical analysts, and the engineers.

Who can Attend?

- Faculty / Researchers / Scientist from academic/ technical institutions / industries and R&D Centres.
- Postdoctoral/Ph.D. students from various institutes, universities, colleges and research organizations.

The workshop is mainly open to the faculty members of the university/institutes/colleges. Postdoctoral/Ph. D. students working on the theme of the workshop will be preferred.

Topics

Fractional ODEs & PDEs
Approximation Methods
Fractional Order Modeling of Dynamic Systems
Fractional Control Problems
Fractional Calculus in Image/Signal Processing
Fractional Variational Calculus and Fractional Euler-Lagrange Equation
Analytical and Numerical Solutions of Fractional Variational Problems

Tentative List of Resource Persons

Prof. O. P. Agrawal, SIUC, Illinois, USA
Prof. Y. Q. Chen, University of California, USA
Prof. F. Liu, Queensland University of Technology Australia
Prof. Carlo Cattani, University of Tuscia, Itlay
Prof. R. C. Mittal, IIT Roorkee
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Dr. M. Malik, IIT Mandi
Dr. V. K. Singh, IIT(BHU) Varanasi
Dr. S. Kumar, IIT (BHU) Varanasi
Dr. Shyam Kamal, IIT(BHU) Varanasi
Dr. Rajeev, IIT(BHU) Varanasi
Dr. Rajesh K. Pandey, IIT(BHU) Varanasi

Registration Fee

Faculty/Scientist from academic/ technical institutions other than IIT(BHU) Varanasi	**Rs. 590**
Postdoctoral/Ph.D. students other than IIT(BHU) Varanasi	**Rs. 354**
Faculty/Scientist from IIT(BHU) Varanasi	**Rs. 500**
Postdoctoral/Ph.D. students from IIT(BHU) Varanasi	**Rs. 300**
Participants from industries	**Rs. 5900**
Foreign Participants	**USD118**

The above fee includes GST of 18% as per institute norms for the participants other than IIT(BHU) Varanasi. The paid fee will not be refunded under any circumstances.
Registration fee must be paid by electronic transfer. The details of the account are given below. **Kindly mention FDTCA21 and participant's organization in the remark section during the bank transaction**. For any queries, please contact to fdtca@iitbhu.ac.in
Please visit the following link for the registration:
https://forms.gle/LhDJNVnV78LP1aN4A

https://conferences.iitbhu.ac.in/FDTCA2021/

Online Registration Fee Payment

Name of Account: **IIT(BHU)-Main Account (Special Fund)**
Account holder name: Registrar, IIT(BHU)
Account No.: **32778803937**
Bank name: **State Bank of India**
Branch: **IT-BHU Branch,** Branch code: **11445**
Account type: **Current,** IFS Code: **SBIN0011445**

Important Dates

Course duration	***November 12-14, 2021***
Last date of registration	***October 25, 2021***
Intimation of selection by email	***November 05, 2021***

Note: e-certificate will be provided to the registered participants.