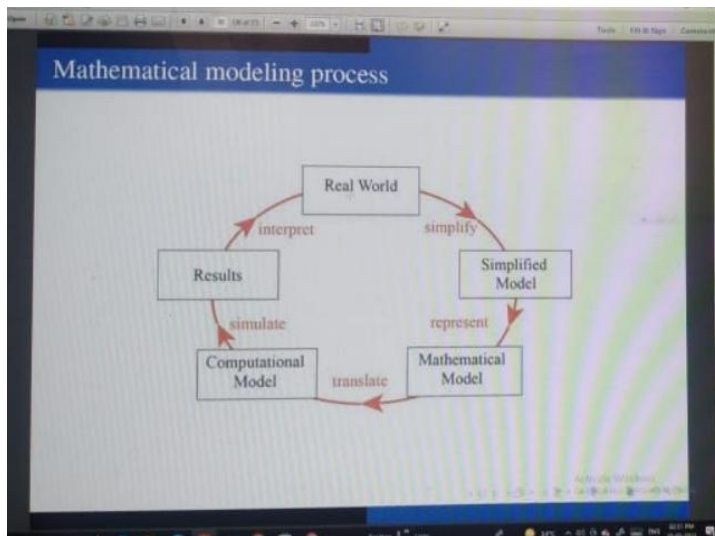


Webinar Series "Convergence-2022" - Applied Mathematics and Algorithmic Graph Theory

Digital learning environments are increasingly popular in higher education and professional training. Teaching and learning via webinars, and web conferencing more broadly, represents one widely used approach. School of Arts, Sciences, Humanities and Education (SASHE) - SASTRA Deemed-to-be University started a Webinar series on "Convergence-2022" titled "**Applied Mathematics and Algorithmic Graph Theory**" on **30th April 2022**. **This webinar series ends on 25th June 2022**. The webinar series is organized with the motivation to provide an excellent platform for academicians, research scholars, and students to become aware of the latest advances in the different domains in the field of Applied Mathematics. Eminent experts from the fields of Applied Mathematics have shared their knowledge and vision. We hope that this Webinar Series triggered further research in Applied Mathematics. Nearly 150 participants from Indian and foreign institutions attended and benefited. Dr.Y.B.Venkatakrisnan and Dr.G.Hariharan, Associate Professors, Department of Mathematics, SASHE, organized the above Webinar Series Çonvergence-2022.

The image shows a screenshot of a webinar interface. On the left, a slide titled "The birth of fractional calculus was the end of the 17th century to a statement made by French mathematician L'Hospital to German mathematician Leibniz." features a diagram with Leibniz and L'Hopital. Leibniz's thought bubble contains $\frac{d^n f}{dt^n}$ with a question mark. L'Hopital's speech bubble asks "What if the order will be $n=1/2$?". A central speech bubble states "It will lead to a paradox from which one day useful consequences will be drawn". On the right, a participant list includes Dr. Sunil Kumar, Dr. VENKATAKRI..., Anantharaman S, Thenmozhi B, Dr. Rajadurai P, Narasimhan D, 21 others, and You.



Done

Talk at Sastra Univ - V1 (35 of 36)

A graph G is vertex critical if $\chi(H) < \chi(G)$ for every proper induced subgraph H of G

Lemma

If a graph G is vertex critical, then the following statements hold.

- 1 $\delta(G) \geq \chi(G) - 1$ ✓
- 2 G cannot have a clique cutset.

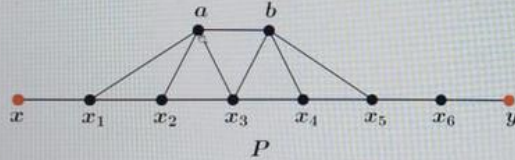
Proof idea:

- 1
 - Let $v \in V(G)$ st. $d(v) \leq \chi(G) - 2$.
 - $\chi(G - v) < \chi(G)$ since G is vertex critical.
 - Color v with a color not present in $N(v)$.
 - $\chi(G) = \chi(G - v)$ (contradiction).
- 2
 - Let S be a clique cutset and G_1, G_2, \dots be the components of $G - S$.
 - Color $[V(G_1) \cup S]$ with $\chi(G) - 1$ colors st. the vertices of S has same colors in all.
 - $\chi(G) = \chi(G - S)$ (contradiction).

B.K.C on (P_2, C_4) -free graphs

Approximation Algorithm

- ▶ Let G be an AT-free graph.
- ▶ There exists a dominating pair (x, y) in G .
- ▶ Let P be a dominating shortest path between x and y in G and $V(P) = t$.
- ▶ Any two adjacent vertices in G dominate at most the vertices of a P_4 in P .



▶ Consequently, $\frac{\gamma_{pr}}{2} \geq \lceil \frac{t}{4} \rceil$, that is, $2 \cdot \lceil \frac{t}{4} \rceil \leq \gamma_{pr}$.

Dr. Arif Pandey (IIT Roorkee)

NCE 7DM 2022

Paired Domination in Graphs 20



Dr. NATARAJAN C



Ganesamurthy S



Narasimhan D



Dinabandhu Pradhan



Shri Prakash TVG



S k

44 others

You

50 PM | hro-oovh-xbg



1-JAFARI-Final-SASTRA.pdf - Adobe Acrobat Pro

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Webinar Series on Applied Mathematics & Algorithmic Graph Theory

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A COMPARISON ON SOME INTEGRAL TRANSFORMS

Hossein Jafari

Department of Mathematical Sciences, University of South Africa, UNISA 0003, South Africa.

June 4, 2022

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CONVERGENCE-2022
Webinar Series on 'Applied Mathematics & Algorithmic Graph Theory'

Open Rating

Prof. Hossein is presenting



Prof. Santanu Saha Ray is presenting

High Order Numerical Methods for Riesz Fractional Partial Differential Equations in Anomalous Diffusion Modelling

Dr. Santanu Saha Ray
 Professor and Head
 Department of Mathematics
 National Institute of Technology
 Rourkela-769008, India

hro-oovh-xbg

13:28
25-06-2022

Prof. Santanu Saha Ray is presenting

Some Mathematics: Successive Differentiation

- n th order derivative of t^n (n is integer),

$$\frac{d^n}{dt^n} t^n = n!$$
- n th order derivative of t^m (m, n are integers) $m > n$ is,

$$\frac{d^n}{dt^n} t^m = \frac{m!}{(m-n)!} t^{m-n}$$
- Use the Euler's Gamma function (Γ) property,
 $n! = \Gamma(n+1)$
- So, we can re-write

$$\frac{d^n}{dt^n} t^m = \frac{\Gamma(m+1)}{\Gamma(m-n+1)} t^{m-n}$$
- Gamma function is defined for positive and negative reals (except for negative integers and zero). So, we let n and m to be reals.

vh-xbg

13:32
25-06-2022

Fractional calculus: some illustrations

Mittag-Leffler function:

A one-parameter function of the Mittag-Leffler type is defined by the series expansion

$$E_{\alpha}(z) = \sum_{k=0}^{\infty} \frac{z^k}{\Gamma(\alpha k + 1)}, \quad (\alpha > 0).$$

The time-fractional diffusion-wave equation:

$$\frac{\partial^{\alpha} u(x, t)}{\partial t^{\alpha}} = \frac{\partial^2 u(x, t)}{\partial x^2},$$

Initial conditions:

$$u(x, 0) = f(x), \quad 0 < x < L$$

$$u_x(x, 0) = 0, \quad 0 < x < L, \quad 0 < \alpha \leq 2$$

Boundary conditions:

$$u(0, t) = u(L, t) = 0, \quad t \geq 0$$

$\frac{\partial^{\alpha}}{\partial t^{\alpha}}$: is the Caputo derivative of order



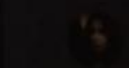
Prof. Samir Saha Ray



Dr. VENKATAKRISHNAN Y.B



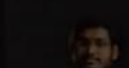
NILKANTA DAS



Priya Singh



Narasimhan D



Raghavendra H Kashyap



21 others



You

