ORGANIZER

Prof. Amirtham Rajagopal
Professor, Dept. of Civil Engg.
IIT Hyderabad,
Kandi, Sangareddy,
Telangana-502284,
India.
Phone: +91 40 2301 6303

CO-ORGANIZER

Dr. Basant Kumar
Scientist F
Advanced Systems Laboratory (ASL)
DRDO,
Telangana - 500058,
India.

Symposium Details

Website
http://www.nmamld2022.com

E-mial:
nonlocal.symposium@ce.iith.ac.in

(For details please visit the symposium website)

Important Dates

Last date for online registration at the symposium website: 20th May 2022

Dates of the course: 7th-8th June 2022

Registration Fees

For participants from academic institutes: Rs 12,000/-

For participants from industry: Rs 20,000/-

For participants from foreign academic institutes / industry: 500 USD.

(Please refer to the website, for payment and registration link)

Venue

(The symposium will be conducted in an offline mode)
Academic Block - B
Dept of Civil Engineering
IIT Hyderabad,
Kandi, Sangareddy,
Telangana - 502284,
India.

About IIT Hyderabad

Indian Institute of Technology Hyderabad, with its fast-paced growth in quality research and teaching, has emerged as one of the top 10 engineering institutes in India in the QS-2021 World Rankings. By prioritizing highly futuristic and novel areas like climate change and AI, IITH has the early movers' advantage of becoming a trendsetter in various other areas as well. We are also in an advantageous position of becoming a pedestal of interdisciplinary research and teaching by synergizing the strengths of our faculty in science, engineering, liberal arts, management & design. IIT Hyderabad is one of the 2nd generations of IITs started by the Govt. of India. Today IITH offers 11 B.Tech programs, 1 B.Des program, 3 M.Sc programs, 18 M.Tech programs, 1 M.Des program, 1 MA program, and 15 Ph.D. programs in all branches of engineering, science, liberal arts, and design. IIT Hyderabad offers 2 years M.Tech program to the foreign Nationals in 9 different departments.

IITH in the past couple of years has been highly successful in building tie-ups with leading academic institutions around the globe. IITH enjoys a very special relationship with Japanese Universities and Industries that goes beyond academics and research collaborations. In fact, some of the iconic buildings in the IITH campus will carry the signature of Japanese architecture. IITH is creating a unique holistic educational ecosystem that offers interactive learning, a highly, flexible academic structure, cutting-edge research, strong industry collaboration, and entrepreneurship. It is providing an environment wherein students and faculty are not afraid to translate their dreams into realities.

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Indian Institute of Technology Hyderabad

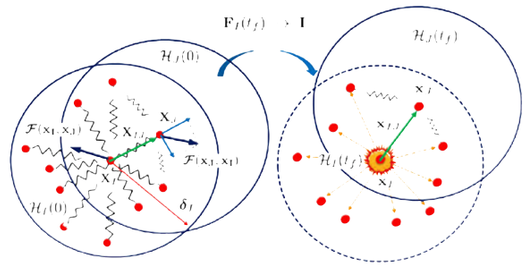
Indian Institute of Technology Hyderabad
Kandi, Sangareddy, Telangana - 502 284
Email: pro@iith.ac.in Phone: 040-23016099
www.iith.ac.in

International Symposium

on

NON-LOCAL MECHANICS APPROACHES FOR MODELING LOCALIZED DEFORMATIONS (NMAMLD)

7th-8th June 2022



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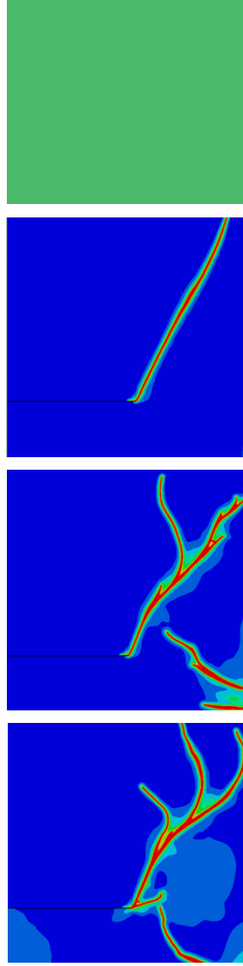
Indian Institute of Technology Hyderabad

Indian Institute of Technology Hyderabad, India



Overview

Nonlocal models have drawn increasing interest from scientific and engineering communities in recent years, due to their ability to describe physical processes which are not well described by classical local theories.

Classical models in Continuum Mechanics are set in a differential framework which assumes that solutions of the systems must be smooth. However, in a variety of applications, the functions may exhibit singularities, discontinuities so classical equations cannot hold. The framework of integral operators assumes little regularity or smoothness for the inputs, thus making it ideal in applications such as image processing, biology models, dynamic fracture. While applied communities have been using nonlocal models successfully, their rigorous mathematical analysis still lacks foundational results that would be needed in complex applications that exhibit a sudden change in behaviour of material, or for which there would be a nonlinear response.

In solid mechanics, for instance, peridynamic models have been proposed to model material failure and damage, since they can naturally represent crack nucleation and growth, unlike classical continuum mechanics models. Nonlocal continuum models have been also proposed to describe anomalous diffusion and transport, which are not correctly modeled by classical theories. Nonlocal models possess length scales, which motivates their use as multiscale models in capturing microstucture influence on the macroscopic behavior of materials. Although there have been many recent advancements in the understanding of nonlocal models, there remains much to be explored.

The purpose of the symposium is to bring together experts from the mathematical, computational, scientific, and engineering communities who work with nonlocal models in order to disseminate the state-of-the-art on the subject and disseminate ideas. The workshop is intended to survey the state-of-the-art in modeling, mathematical analysis, and computational practice for nonlocal theories, while exploring new application domains and promoting new collaborations.

SPEAKERS AT THE SYMPOSIUM

Prof. JN Reddy
Texas A&M University
USA

Prof. Paul Steinmann
University of Erlangen
Nuremberg, Germany

Prof. S. Gopalakrishnan
Indian Institute of Science
Bangalore, India

Prof. Debashish Roy
Indian Institute of Science,
Bangalore, India

Prof. Erdogan Madenci
University of Arizona
USA

Prof. Arun Srinivasa
Texas A&M University
USA

Prof. Saswata Bhattacharya
Indian Institute of Technology
Hyderabad, India

Prof. Ashok Pandey
Indian Institute of Technology
Hyderabad, India

Prof. Srinivasan M Sivakumar
Indian Institute of Technology
Madras, India

Dr. Pablo D Seleson
Research Scientist
Oak Ridge National Laboratory
(ORNL). USA

Prof. Amirtham Rajagopal
Indian Institute of Technology
Hyderabad, India

Benefits of Attending the Symposium

This course is intended to provide graduate students, engineers, and researchers working in aerospace, automotive, civil, mechanical engineering, and materials and manufacturing industries with the theory and applications of nonlocal mechanics approaches for modeling localized elastic and inelastic deformations.

The persons attending the course will benefit in gaining knowledge and information in the following areas:

- Nonlocal / Non-Classical Mechanics
- Continuum Peridynamic Formulations
- Nonlocal Approaches in Fracture / Damage Mechanics
- Nonlocal Plasticity
- Applications of Nonclassical Mechanics in Defence and Aerospace Sector