ABOUT THE DEPARTMENT

The Department of Physics in the University of Calicut, was established in 1971. Ever since its establishment, the department has played a key role in strengthening postgraduate teaching and research in physics through active contact and collaboration with several research institutes and universities in India and abroad. The research programs of the department cover prime areas of Nuclear Physics, Astrophysics, Nuclear astrophysics, Radiation Physics & Medical radiation therapy and dosimetry , Solid- state Physics, Plasma Physics, Material sciences etc. The faculty members and students are involved in various collaborations with institutions like INFN-Italy (FOOT collaboration), Inter University Accelerator Centre (IUAC), New Delhi; Bhabha Atomic Research Centre (BARC), Mumbai; Tata Institute of Fundamental Research (TIFR), Mumbai; Variable Energy Cyclotron Centre (VECC), Kolkata Malabar Cancer Centre (MCC) Thalassery, Indo-Belgium collaboration etc..

Research activities in nuclear physics focus on low and medium energy nuclear physics involving nuclear astrophysics, nuclear reactions, radiation physics, radiation dosimetry, fusion-fission, breakup, development of nuclear particle detectors, cluster radioactivity, fusion evaporation residue measurements, fission cross section measurements, particle transfer and target fragmentation .

ABOUT THE PROGRAM

Join us for the upcoming workshop of GEANT4, where leading scientists and researchers from around the nation will converge to explore the importance of nuclear data in the fields of nuclear physics, medical applications, radiation physics, and space science. This conference aims to foster collaboration and innovation in applying nuclear data, specifically due to fragmentation, in Medical Physics, Radiation therapy and Space Safety. In medical radiation therapy, data on fragmentation of targets as well as transfer mechanism is essential for estimating the dose tailing and diffusion, caused due to high LET radiations, disturbing the desired dosimetric pattern. In space missions, astronauts and many of the components of space vehicles are exposed to high energy radiations in the GeV range. Specific data on production of high LET particles and radiation effects on space electronics and devices are essential in designing the shielding apparels and masks, space radiation effect.

The program will feature hands-on sessions of GEANT4 from esteemed experts across these fields, cutting-edge research presentations, and engaging panel discussions on a variety of topics including medical imaging and therapy. Attendees will have the opportunity to explore microscopic and macroscopic domains of rapidly evolving interdisciplinary field.

CHAIRMAN

Dr. Mohamed Shahin Thayyil
Professor and Head
Department of Physics)

CONVENOR

Dr. M. M. Musthafa
Senior Professor,
Department of Physics

SECRETARY

Dr. Muhammed Shan P T
Asst Professor(Radiation Physics) ,Department of Physics

Department of Physics, University of Calicut

National Workshop on GEANT4 For Applied Nuclear Physics-II

February 19, 20 &21-2025

Programme Schedule

Day 1: 19.02.2025, Wednesday

9:30 am to 10:00 am
Registration and Reception

10:00am to 10:30 am
Inauguration

10:30 am to 11:30 am
Basics of Monte Carlo methods
Dr. Anoop Verghese
Asst. Professor, NIT Calicut

11:30 am to 1:00 pm
Monte Carlo methods in Nuclear Physics
Dr. Shareef M
Asst. Professor, NIT Calicut

1:00 pm to 1:45 pm
Lunch Break

1:45 pm to 2:45 pm
Introductory talk on Geant4
(Important aspect of C++, Geometry, Geant4 architecture)
Dr. Raman Sehgal
Scientific officer, NPD, BARC, Mumbai

2:45 pm to 3:45 pm
Introduction to Hands on sessions assignment
(a.) NaI (b) Scattering experiment
Dr. Midhun C V
ELI-NP, Romania

3:45 pm to 4:45 pm
Tracking and Scoring using Stepping Action in Geant4
Dr. Raman Sehgal
Scientific officer, NPD, BARC, Mumbai

4:45 pm to 7:30 pm
Simulation of NaI scintillator efficiency-Hands on
Dr. Jafar Sadique E
Asst. Professor, University of Calicut

Day 2: 20.02.2025 , Thursday

9:30 am to 11:00 am
Fundamentals of Track Finding and Track Reconstruction Techniques
Dr. Mohammed Salim M
Asst. Professor, TKM College of Arts & Science, Kollam

11:00 am to 12:30 pm
Physics Lists in Geant4
Dr. Raman Sehgal
Scientific officer, NPD, BARC, Mumbai

12:30 pm to 1:15 pm
Lunch Break

1:15 pm to 2:30pm
Sensitive Detector in Geant4
Dr. Raman Sehgal
Scientific officer, NPD, BARC, Mumbai

2:30 pm to 4:00 pm
Hands on Session : Simulation of NaI scintillator & Scattering experiment with User defined Physics List and Scoring using Sensitive Detector- I
Dr. Raman Sehgal
Scientific officer, NPD, BARC, Mumbai

4:00 pm to 5:45 pm
Hands on Session : Simulation of NaI scintillator & Scattering experiment with User defined Physics List and Scoring using Sensitive Detector- II
Dr. Mohammed Salim M
Asst. Professor, TKM College of Arts & Science, Kollam

Day 3: 21.02.2025 , Friday

9:30 am to 11:00 am
Tracking in Magnetic Fields:Advanced Reconstruction with the Kalman Filter
Dr. Mohammed Salim M
Asst. Professor, TKM College of Arts & Science, Kollam

11:00 am to 12:30 pm
Introduction to Messenger mechanims in Geant4
Dr. Raman Sehgal
Scientific officer, NPD, BARC, Mumbai

12:30 pm to 1:15 pm
Lunch Break

1:15 pm to 2:45 pm
Hands on session - Track reconstruction I
Dr. Raman Sehgal
Scientific officer, NPD, BARC, Mumbai

2:45 pm to 4:15 pm
Hands on session - Track reconstruction II
Dr. Mohammed Salim M
Asst. Professor, TKM College of Arts & Science, Kollam

4:15 pm to 5:00 pm
Valedictory function

Contact Us

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