

SASTRA FOUNDATIONS

Inauguration of Nobel Lecture Series
and the first lecture on Physics
Nobel prize-2023



STIM

ATTOSECOND DYNAMICS: THE NOBEL PRIZE IN PHYSICS 2023

04 DECEMBER 2023

AT 2:30 PM

VIA GOOGLE MEET
(ONLINE)



SPEAKER:

PROF. P. C. DESHMUKH
PROFESSOR, IIT TIRUPATI



Registration link:
(for institute)



Registration link:
(for individual)



Contact: sastrafoundations@gmail.com

Attosecond Dynamics : The Nobel Prize in Physics 2023

P. C. Deshmukh

Department of Physics
and
Center for Atomic, Molecular, and Optical Sciences & Technologies,
Indian Institute of Technology Tirupati,
Tirupati

Movement of an electron wave-packet in atoms and molecules takes place in a very short time, of the order of an attosecond (10^{-18} sec). This is a very tiny interval; there are as many attoseconds in one second as there are seconds in the life of our universe since the Big Bang. Investigating physical processes on the *natural* atomic time scales requires high precision and innovative experimental techniques and also advanced theoretical methods. We will visit some exciting aspects of attosecond dynamics to celebrate the 2023 Nobel Prize in Physics awarded to Pierre Agostini, Ferenc Krausz and Anne L'Huillier, who "demonstrated a way to create extremely short pulses of light that can be used to measure the rapid processes in which electrons move or change energy". We shall also discuss a few interesting applications of attosecond light pulses

P. C. Deshmukh is Convener and Mentor of the Center for Atomic, Molecular, and Optical Sciences and Technologies (CAMOST), which is a joint initiative of the IIT Tirupati and the IISER Tirupati. He is concurrently an Adjunct Professor of Physics at the IIT Tirupati. His new book Quantum Mechanics – Formulation, Methodologies, and Applications is expected to be very well received, just as his previous book Foundations of Classical Mechanics was. Both of these books are published by the Cambridge University Press. About two hundred of his video-lectures, covering four full-fledged courses, are available on the internet. These have been published by the NPTEL and SWAYAMPRAKHA. He has taught undergraduate and graduate courses, and guided graduate research, at the IIT-Madras for over three decades, and also at the IIT Mandi, Georgia State University Atlanta, University of Western Ontario at London, Canada, and at the IIT Tirupati and the IISER Tirupati. He has mentored a significant number of undergraduate students, Ph.D. students, Post-Doctoral Research Fellows, and also young colleagues. His research group is one of the leading contributors to relativistic many-body studies of attosecond dynamics in atomic photoionization processes.

SASTRA was founded by a group of like-minded individuals with a desire to address pertinent social challenges. SASTRA has a diverse group of members from different professions, such as the arts, sciences and sports. Our members joined voluntarily to initiate conversations, spread awareness and make consistent efforts to change our society for its betterment. Science Technology Innovation Mission (STIM) is a subsection of SASTRA formed with a mission to empower science and technology education. The STIM of SASTRA intends to work towards a greener, viable, and amicable solution to the issues in the community from a scientific and technological point of view. The broader perspective is to generate interest towards scientific and technological ideas. Furthermore, enhancing the scientific temperament in society will be the soul of action points of SASTRA under the STIM.
