



# **D. M. BOSE MEMORIAL LECTURE 2021**



*137<sup>th</sup>* BIRTHDAY OF  
PROF. DEBENDRA MOHAN BOSE

26th November, 2021 at 3.00 p.m.  
(through virtual mode)

**BOSE INSTITUTE**  
KOLKATA



## *“Musings on Mass”*

**PROF. AMITAVA RAYCHAUDHURI**

Emeritus Professor  
Department of Physics  
University of Calcutta

### **Abstract**

Mass is a very familiar property. Yet, it remains quite intriguing. It plays a central role in gravitation. An understanding of the origin of mass of elementary particles was only recently established. In the very successful Standard Model of particle Physics neutrinos are massless. But experiments over the last two decades have conclusively established that neutrinos do have a non-zero but very tiny mass, whose origin remains unknown. Another important manifestation of mass is through Dark Matter, which too does not have an explanation within the Standard Model. In this talk we take a trip through these issues without going into much technical detail.



**BOSE INSTITUTE**  
KOLKATA

As a part of the Celebration of the  
**75<sup>TH</sup> Year of Independence of India**  
**Azadi Ka Amrit Mahotsav**

Bose Institute Observes  
**137<sup>th</sup> Birthday of Prof. Debendra Mohan Bose**

Director  
and  
Staff Members of Bose Institute  
request the pleasure of your company at the  
**D. M. BOSE MEMORIAL LECTURE 2021**

on  
**26th November, 2021 at 3.00 p.m.**  
**(through virtual mode)\***

*Speaker*  
**PROF. AMITAVA RAYCHAUDHURI**  
Emeritus Professor  
Department of Physics  
University of Calcutta, Kolkata

Titled  
*"Musings on Mass"*

**Prof. Soumitra SenGupta**  
Amal Kumar Raychaudhuri Chair Professor  
School of Physical Sciences  
Dean ( Faculty affairs and Staff matters )  
Indian Association for the Cultivation of Science ( IACS ), Kolkata  
has kindly consented to preside over the programme.

**Prof. (Dr.) Uday Bandyopadhyay**  
*Director*  
Bose Institute

**\*Virtual link to the programme: [www.jbose.ac.in/dmbose](http://www.jbose.ac.in/dmbose)**

"Education is the manifestation of the perfection already in man..."

- *Swami Vivekananda*



*A Brief Biodata of*  
**PROF. AMITAVA RAYCHAUDHURI**

**Emeritus Professor**  
**Department of Physics**  
**University of Calcutta**

Amitava Raychaudhuri was born in Kolkata, where he received his school education. He studied Physics at Presidency College (University of Calcutta) for his B.Sc. (Hons) and then did M.Sc. (1973) from Delhi University. In 1977 he obtained a Ph.D. from the University of Maryland, USA working in particle physics under the supervision of Professor O.W. Greenberg.

After Post-doctoral work at the University of Oxford, UK and TIFR, in 1980 he joined the University of Calcutta as a Lecturer in Physics. Subsequently he was the Reader and then the Sir Tarak Nath Palit Professor of Physics. During 2005-11 he was the Director, Harish-Chandra Research Institute, Allahabad. He was a Scientific Associate (1983-84) at CERN, Senior Indo-US Fulbright Fellow (1988-89) at the Lawrence Berkeley Laboratory, USA and a Senior Marie Curie Fellow (1994) at the University of Cambridge. He was also a Visiting Professor (1998) at the Oklahoma State University.

Over the years Raychaudhuri's research has covered a diverse spread within particle Physics: encompassing QCD, GUTs, Classical solutions, Left-Right symmetric models, FCNC. Super symmetry, Neutrino physics, Extra Dimensions, etc. Lately he has also been involved with the INO project. He has mentored 15 Ph.D. students who have established themselves as important members of the international scientific community.

Raychaudhuri has made pioneering contributions in CP-violation in super symmetric models, the possibility of parity restoration at relatively low energies, neutrino masses and mixing in super symmetric and other models, long baseline neutrino experiments, besides making a brief but important foray in the foundations of Quantum Mechanics.

Amitava Raychaudhuri was chosen for the INSA young scientist award in 1982 and is a fellow of the Indian National Science Academy, National Academy of Sciences, India and the Indian Academy of Sciences. He was awarded the Shanti Swarup Bhatnagar Prize in 1997 and was chosen the International alumnus of the year by the University of Maryland, USA in 2005.