

Felicitation of
**INTERNATIONAL OLYMPIAD
MEDALLISTS, 2023**
in the sciences and mathematics

SCIENTIFIC PROGRAMME

09.30 to 11.30 hrs

Expository lectures by eminent scientists

AWARD CEREMONY

12.00 to 13.30 hrs

Friday, December 22, 2023

The event is organized by

Homi Bhabha Centre for Science Education, TIFR

in association with

Infosys Foundation and the **TIFR Endowment Fund.**

**FELICITATION
of
INTERNATIONAL OLYMPIAD MEDALLISTS, 2023
in the sciences and mathematics**

Friday, December 22, 2023

SCIENTIFIC PROGRAMME: 09.30 to 11.30 hrs
Expository lectures by eminent scientists

AWARD CEREMONY: 12.00 to 13.30 hrs

An event organized by HBCSE (TIFR) in association with
the Infosys Foundation & the TIFR Endowment Fund.

**Homi Bhabha Centre for Science Education
Tata Institute of Fundamental Research**

V. N. Purav Marg, Mankhurd, Mumbai – 400 088

<http://www.hbcse.tifr.res.in>

OLYMPIADS IN MATHEMATICS, SCIENCES AND INFORMATICS

The International Olympiads in Mathematics, Physics, Chemistry, Biology, Astronomy and Astrophysics, Junior Science, Earth Science and Informatics are annual academic competitions to stimulate and challenge bright young pre-university students. The aims of the International Olympiads are to promote academic excellence and also to foster friendship among students and teachers of different countries. India started participating in International Olympiads in Mathematics from 1989, in Physics, Chemistry, Biology, Astronomy and Informatics about a decade later, followed by participation in the Earth Science and the Junior Science Olympiads. India has hosted the International Mathematical Olympiad (1996), International Chemistry Olympiad (2001), International Astronomy Olympiad (2006), International Biology Olympiad (2008), International Earth Science Olympiad (2013), International Junior Science Olympiad (2013), International Physics Olympiad (2015) and International Olympiad on Astronomy and Astrophysics (2016).

Homi Bhabha Centre for Science Education (HBCSE), Tata Institute of Fundamental Research (TIFR) is the nodal agency for implementing the Olympiad programme in Mathematics, Physics, Chemistry, Biology, and Astronomy and Astrophysics. The Olympiad programme in the four science subjects is overseen by a National Steering Committee. The Indian Olympiad programme typically involves three stages of selection. The first stage selects a few hundred students from among tens of thousands who appear for the preliminary examinations all over the country. The first stage of the science Olympiads is carried out by the Indian Association of Physics Teachers (IAPT) with support from teacher associations of chemistry and biology. In the mathematics Olympiads carried out under the aegis of the National Board of Higher Mathematics (NBHM), the first stage is conducted by the Mathematics Teachers' Association, India (MTAI) and the second stage is decentralised.

The higher stages in the four science subjects and mathematics are carried out by HBCSE with support from teachers and scientists nationwide. The second stage (third stage for mathematics) is the Indian National Olympiads – the most challenging contests in mathematics and sciences at the pre-college level held in the country. Between 35 and 50 national Olympiad winners in each subject undergo training and testing every summer at HBCSE, after which the Indian teams are selected to represent the country at the International Olympiads.

The Earth Science Olympiad programme is carried out by the Geological Society of India (GSI), the camp being held at Bengaluru or Chennai. The Junior Science Olympiad is conducted by IAPT. The Junior Astronomy Olympiad is under the supervision of the National Council of Science Museums (NCSM) with the training camp being held at NCSM centres. The Informatics Olympiad programme is carried out by the Indian Association for Research in Computing Science (IARCS), the training camp being held at The International School, Bengaluru.

The Science Olympiad programme in India is funded by the Board of Research in Nuclear Sciences (BRNS) of the Department of Atomic Energy (DAE), the Department of Science and Technology (DST) and the Ministry of Education (MoE). The Mathematics Olympiad programme is funded by NBHM (DAE) and MoE. The Astronomy Olympiad programme is funded by the Department of Space (DOS), DAE, and NCSM. The Informatics Olympiad is funded by Indian Association for Research in Computing Science (IARCS), Sasken Technologies Ltd, TCS iON (a division of Tata Consultancy Services), CodeChef (a not-for-profit educational initiative of Unacademy) and Chennai Mathematical Institute. The Earth Science Olympiad programme is funded by the Ministry of Earth Sciences (MoES).

Indian students have been doing consistently well at the International Olympiads. In 2023 the performance was: Mathematics – 2 Gold, 2 Silver, 2 Bronze; Physics – 3 Gold, 2 Silver; Chemistry – 1 Gold, 3 Silver; Biology – 4 Gold; Astronomy and Astrophysics – 4 Gold, 1 Silver; Junior Science – 5 Gold, 1 Silver; Astronomy and Astrophysics Junior – 1 Gold, 1 Silver, 1 Bronze; Informatics – 1 Gold, 2 Silver, 1 Bronze; Earth Science – 3 Gold, 7 Silver, 6 Bronze, 1 Excellent (=Gold), 9 Very Good (=Silver), 4 Good (=Bronze). All 45 students who participated in various Olympiads, won either a gold, silver or bronze medal. Our Olympiad students are comparable with the best in the world and we are justifiably proud of them.

ACKNOWLEDGEMENTS

In 2002, Infosys Foundation instituted awards to Indian medallists in the International Olympiads. The awards consist of a cash prize of Rs 15000, the grant for which has been given to the TIFR Endowment Fund. HBCSE (TIFR) expresses its deep gratitude to the Infosys Foundation for its spontaneous and generous response to the Institute's request for this support. We also thank the TIFR Endowment Fund for their proactive interest in the Olympiad programme.

The Government of India has been generously supportive of the Olympiad programme through its various agencies as listed above. We are thankful for this support and for the support for the Informatics Olympiad by the agencies listed. Finally, it is a pleasure to thank the Indian Association of Physics Teachers, the Association of Teachers in Biological Sciences, the Association of Chemistry Teachers, the Mathematics Teachers' Association (India), Indian Physics Association, National Council of Educational Research and Training, IARCS, GSI, NCSM and the large number of scientists and teachers from different institutions across the country for their enthusiastic collaboration in this exciting activity.

Arnab Bhattacharya

Chair, National Steering Committee
Science and Astronomy Olympiads.

Morning Session

Expository Lectures by Eminent Scientists

Lecture 1 (9:30 to 10:30 hrs)

Prof. Dipankar Bhattacharya

Ashoka University, Sonapat



Astronomy from Space: The India Story

Astronomical observations today span over large regions of the spectrum, most of which are blocked by our atmosphere. Astronomy from space-based platforms have thus become an essential part of modern investigations. From a modest beginning, India has built up extensive capabilities for space astronomy over the years and is forging ahead with multiple high-quality missions. This lecture will recount the Indian journey in this field, summarise the current achievements and introduce some of the future programmes. Opportunities for students at all levels to engage with these missions are being created and will be discussed.

About the Speaker

Prof. Dipankar Bhattacharya is the Sunanda and Santimay Basu Chair Professor in Astrophysics at Ashoka University. Prior to joining Ashoka he was the Dean, Core Academic Programmes at the Inter-University Centre for Astronomy and Astrophysics (IUCAA).

He received his Bachelors' and Masters' degrees in Physics from Jadavpur University, Kolkata, and his PhD from the Indian Institute of Science, Bengaluru. He carried out post-doctoral research at the University of Amsterdam and the University of California, Santa Barbara and was a member of the faculty at the Raman Research Institute, Bengaluru before moving to IUCAA.

His research interests cover both theoretical astrophysics and observational astronomy, with particular emphasis on High Energy Astrophysics including compact stars, black holes and cosmic explosions. He is closely associated with the Indian space astronomy mission AstroSat and is the chair of its Science Working Group.

Morning Session

Expository Lectures by Eminent Scientists

Lecture 2 (10:30 to 11:30 hrs)

Prof. Sanghamitra Bandyopadhyay

Indian Statistical Institute, Kolkata



Artificial Intelligence: An Overview and Applications in Healthcare

Artificial Intelligence (AI) is the area devoted to programming machines in such a way that they can simulate human-like intelligence. AI techniques are finding increasingly innovative applications in all branches of science, including the broad domain of healthcare. In healthcare, these methods are finding widespread use for facilitating novel discoveries and for gaining deeper insights into various processes of life. In this talk we will first present an overview of artificial intelligence, touching upon its history, genesis and developments. We will also provide an overview of molecular biology. We will then discuss some case studies on applications of AI techniques in healthcare.

About the Speaker

Prof. Sanghamitra Bandyopadhyay did her B Tech, M Tech and Ph.D. in Computer Science from Calcutta University, IIT Kharagpur and Indian Statistical Institute respectively. She then joined the Indian Statistical Institute as a faculty member, and became the Director in 2015. Since 2020 she is continuing in her second tenure as the Director of the Institute. Her research interests include computational biology, soft and evolutionary computation, artificial intelligence and machine learning. She is the recipient of several awards including the Shanti Swarup Bhatnagar Prize in Engineering Science, TWAS Prize, Infosys Prize, JC Bose Fellowship, Swarnajayanti fellowship, INAE Silver Jubilee award, INAE Woman Engineer of the Year award (academia), IIT Kharagpur Distinguished Alumni Award, Humboldt Fellowship from Germany, Senior Associateship of ICTP, Italy, young engineer/scientist awards from INSA, INAE and ISCA, and Dr. Shanker Dayal Sharma Gold Medal and Institute Silver from IIT, Kharagpur, India. She is a Fellow of the Indian National Science Academy (INSA), National Academy of Sciences, India (NASI), Indian National Academy of Engineers (INAE), Indian Academy of Sciences (IASc), Institute of Electrical and Electronic Engineers (IEEE), The World Academy of Sciences (TWAS), International Association for Pattern Recognition (IAPR) and West Bengal Academy of Science and Technology. She serves as a member of the Science, Technology and Innovation Advisory Council of the Prime Minister of India (PM-STIAC). In 2022, she received the Padma Shri award, the fourth highest civilian award of the Government of India.

Afternoon Session (12:00 – 13:30 hrs.)

Address & Award distribution by

Prof. H. C. Pradhan
Formerly, Senior Professor and Centre Director
Homi Bhabha Centre for Science Education



About the Chief Guest

Prof. H.C. Pradhan retired in July 2011, as Senior Professor and Centre Director, Homi Bhabha Centre for Science Education (HBCSE), TIFR. After graduating from the University of Mumbai with top rank, Prof. Pradhan completed his doctorate in theoretical nuclear physics from the Massachusetts Institute of Technology (1971). After post doctoral fellowships at McMaster University and University of Wisconsin (Madison), he returned to India and taught physics initially at Ramnarian Ruia College, Mumbai (1978-80) and then worked at the Western Regional Instrumentation Centre, University of Mumbai (1980-1988). In 1988, Prof. Pradhan joined HBCSE where he was Dean of Faculty from 1999 to 2008, and then the Centre Director from 2008 to 2011. From 2012 to 2017, he was a Raja Ramanna Fellow of the Department of Atomic Energy, Govt. of India.





Prof. Pradhan is well known for his work on childhood education at the grassroots level and in the marathi language, especially through his long association with the Maharashtra Vigyan Parishad (MVP) and the NGO, Gram Mangal. He received the Marathi Jeevan Gaurav Award by Manohar Vichare Foundation in 2018, and the prestigious Goda Gaurav Award for lifetime contribution to scholarship in science from the Kusumagraj Foundation, Nashik in 2022. He is a fellow of Maharashtra Academy of Sciences. He chairs the National Experts Advisory Committee of NCSTC, DST, Government of India, which oversees children-centric science programs like National Children's Science Congress (NCSC). He is also a member of the Strategic Advisory Committee of the Maharashtra Knowledge Corporation Limited.

INDIAN DELEGATION TO THE 64th INTERNATIONAL MATHEMATICAL OLYMPIAD 2023

The following team represented India at the 64th International Mathematical Olympiad held at Chiba, Japan from July 2 to July 13, 2023.






Sr. no.	Students	Medals	
1	Arjun Gupta Mother Divine Public School, Delhi	Gold	
2	Atul Shatavart Nadig Shri Ram Global School, Bengaluru	Gold	
3	Ananda Bhaduri Sarala Birla Gyan Jyoti, Kamrup	Silver	
4	Siddharth Choppara Sri Chaitanya Techno School, Bavdhan, Pune	Silver	
5	Adhitya Venkata Ganesh Mangudy Sri Chaitanya Techno School, Pune	Bronze	
6	Archit Manas Delhi Public School, Faridabad	Bronze	

Leaders and Scientific Observers





1	Prof. Prithwijit De Homi Bhabha Centre for Science Education, Mumbai	Leader	
2	Mr. Sahil Mhaskar Chennai Mathematical Institute, Chennai	Deputy Leader	
3	Mr. Anant Mudgal University of California, USA	Observer 'A'	
4	Mr. Pranjal Srivastava Massachusetts Institute of Technology, USA	Observer 'B'	

INDIAN DELEGATION TO THE 53rd INTERNATIONAL PHYSICS OLYMPIAD 2023

The following team represented India at the 53rd International Physics Olympiad held at Tokyo, Japan from July 10 to July 17, 2023.

Sr. no.	Students	Medals	
1	Aditya DL DAV Model School, Pitampura	Gold	
2	Mehul Borad Narayana Junior College, Hyderabad	Gold	
3	Dhruv Shah Abhinav English School, Pune	Gold	
4	Raghav Goyal Bhavan Vidyalaya, Panchkula	Silver	
5	Rhythm Kedia MB International School, Kota	Silver	

Leaders and Scientific Observers





1	Prof. Arun V. Kulkarni Birla Institute of Technology & Science (BITS), Pilani, Goa	Leader	
2	Dr. Shirish Pathare Homi Bhabha Centre for Science Education (HBCSE), Mumbai	Leader	
3	Prof. Anwesh Mazumdar Homi Bhabha Centre for Science Education (HBCSE), Mumbai	Scientific Observer	
4	Dr. Leena Joshi St. Xaviers' College, Mumbai	Scientific Observer	

INDIAN DELEGATION TO THE 55th INTERNATIONAL CHEMISTRY OLYMPIAD 2023

The following team represented India at the 55th International Chemistry Olympiad held at Zurich, Switzerland, from July 16 to July 25, 2023.





Sr. no.	Students	Medals	
1	Krish Srivastava Himalayan International School, Patna, Bihar	Gold	
2	Avaneesh Bansal Maa Bharti Senior Secondary School, Kota	Silver	
3	Malay Kedia Seth Anandram Jaipuria School, Ghaziabad	Silver	
4	Aditi Singh Satyameva Jayate International School, Bopal, Ahmedabad	Silver	

Leaders and Scientific Observers





1	Prof. Anupa Kumbhar Savitribai Phule Pune University, Pune	Head Mentor	
2	Prof. N. Manoj Cochin University of Science and Technology (CUSAT), Kochi	Mentor	
3	Dr. Shraeddha Tiwari Institute of Chemical Technology (ICT), Mumbai	Scientific Observer	
4	Prof. Gulshanara Shaikh Formerly, St. Xavier's College, Mumbai	Scientific Observer	

INDIAN DELEGATION TO THE 34th INTERNATIONAL BIOLOGY OLYMPIAD 2023

The following team represented India at the 34th International Biology Olympiad held at Al Ain, UAE from July 3 to July 11, 2023.





Sr. no.	Students	Medals	
1	Dhruv Advani G. R. International School, Bengaluru	Gold	
2	Megh Chhabda Jalna Education Society's R.G.Bagadiya Arts, S.B.Lakhotiya Commerce and R. Bezonji Science College, Jalna	Gold	
3	Rohit Panda Delhi Public School, Risali, Bhilai	Gold	
4	Ishan Pednekar Disha Delphi Public School, RK Puram, Kota	Gold	

Leaders and Scientific Observers





1	Prof. Madan M. Chaturvedi Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram	Leader	
2	Dr. Anupama Ronad Homi Bhabha Centre for Science Education (HBCSE), Mumbai	Leader	
3	Dr. V. V. Binoy National Institute of Advanced Studies, Bengaluru	Scientific Observer	
4	Dr. Rambhadur Subedi ICMR-National Institute for Research in Reproductive and Child Health (NIRRH), Mumbai	Scientific Observer	

INDIAN DELEGATION TO THE 16th INTERNATIONAL OLYMPIAD ON ASTRONOMY AND ASTROPHYSICS 2023

The following team represented India at the 16th International Olympiad on Astronomy and Astrophysics held at Chorzów, Poland from August 10 to August 20, 2023.







Sr. no.	Students	Medals	
1	Md. Sahil Akhtar Delhi Public School, Kolkata	Gold	
2	Rajdeep Mishra Disha Delphi Public School, Kota	Gold	
3	Akarsh Raj Sahay School of Scholars, Nagpur	Gold	
4	Koduru Tejeswar FIITJEE Junior College, Vijayawada	Gold	
5	Sainavaneet Mukund Shri Ram Global School, Bengaluru	Silver	



Leaders and Scientific Observers

1	Prof. Surhud More Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune	Leader	
2	Mr. Pritesh Ranadive Homi Bhabha Centre for Science Education (HBCSE), Mumbai	Leader	
3	Prof. Bhaswati Mookerjee Tata Institute of Fundamental Research (TIFR), Mumbai	Scientific Observer	
4	Mr. Anindya De Hindu School, Kolkata	Scientific Observer	

INDIAN DELEGATION TO THE 16th INTERNATIONAL EARTH SCIENCE OLYMPIAD 2023 (VIRTUAL MODE)



The following team represented India at the 16th International Earth Science Olympiad held in virtual mode and hosted by International Geoscience Education Organisation (IGEO) from August 20 to August 26, 2023.

Sr. no.	Students	Medals	
1	Daksh Lahoty Innisfree House School, Bengaluru	1 Gold, 1 Silver, 1 Bronze	
2	Rigzin Lhamo Jawahar Navodaya Vidyalaya, Leh Ladakh	1 Gold, 1 Silver, 2 VG, 1 Gd	
3	Kshemaahna Nagi Vidyashilp Academy, Bengaluru	1 Gold, 1 Silver, 1 E, 1 VG	
4	Apoorva Jha Sagar Public School, Bhopal	2 Silver, 2 VG, 1 Gd	
5	Rigveda D Gupta Florence Academy, Bengaluru	2 Silver	
6	Badri Vishal.K Alpine Public School, Bengaluru	2 Bronze, 2 VG, 1 Gd	

7	Manya Jain Cosmos Castle International School, Green Campus, Ahmedabad	2 Bronze, 2 VG	
8	Arpita Maurya Shradhalaya Public School, Kota	1 Bronze, 1 Gd	







E – Excellent (=Gold), VG – Very Good (=Silver), Gd – Good (=Bronze)

Leaders and Scientific Observers





1	Prof. Hema Achyuthan Institute of Ocean Management, Anna University, Chennai	Mentor	
2	Prof. Devesh Walia North-Eastern Hill University, Shillong	Mentor	

INDIAN DELEGATION TO THE 20th INTERNATIONAL JUNIOR SCIENCE OLYMPIAD 2023

The following team represented India at the 20th International Junior Science Olympiad held at Bangkok, Thailand from December 1 to December 10, 2023.




Sr. no.	Students	Medals	
1	Divya Agrawal International Public School, Biaora, Rajgarh	Gold	
2	Kanishk Jain Narayana e-Techno School, Mumbai	Gold	
3	Mahroof Ahmed Khan Maa Bharti Senior Secondary School, Kota	Gold	
4	Soham Pednekar Pawar Public School, Bhandup, Mumbai	Gold	
5	Rudra Pethani Innovative International School, Rajkot	Gold	
6	Archit Bhalodiya Ultra secondary School, Keshod	Silver	

Leaders and Scientific Observers




1	Prof. Devesh K. Tyagi D. A. V. P. G. College, Muzaffarnagar	Leader	
2	Dr. Rajeev Chikate, Formerly, Abasaheb Garware College, Pune	Leader	
3	Dr. Nikhil Vishvas Palande Shri Mathuradas Mohota College of Science, Nagpur	Leader	
4	Prof. Vinayak Katdare Formerly, D. G. Ruparel College, Mumbai	Scientific Observer	

INDIAN DELEGATION TO THE 2nd INTERNATIONAL OLYMPIAD ON ASTRONOMY AND ASTROPHYSICS JUNIOR 2023

The following team represented India at the 2nd International Olympiad on Astronomy and Astrophysics Junior held at Volos, Greece from September 24 to September 30, 2023.





Sr. no.	Students	Medals	
1	Aarush Mishra Maa Bharti Senior Secondary School, Kota	Gold	
2	Siddharth Kumar Gopal St. Thomas Residential School, Thiruvananthapuram	Silver	
3	Satwik Patnaik Deepika English Medium School, Rourkela	Bronze	

Leaders and Scientific Observers



1	Dr. Anindita Mondal Nehru Science Centre, Mumbai	Leader	
2	Mr. Jayant Gangopadhyay Regional Science Centre and Planetarium, Calicut	Leader	
3	Mr. Manash Bagchi Central Research and Training Laboratory, Kolkata	Leader	

INDIAN DELEGATION TO THE 35th INTERNATIONAL OLYMPIAD IN INFORMATICS 2023

The following team represented India at the 35th International Olympiad in Informatics held at Hungary from August 28 to September 4, 2023.

Sr. no.	Students	Medals	
1	Kshitij Sodani Disha Delphi Public School, Kota	Gold	
2	Paras Kasmalkar The Orchid School, Pune	Silver	
3	Shreyan Ray La Martiniere for Boys, Kolkata	Silver	
4	Sushil Raaja U Budding Minds International School, Chennai	Bronze	

Leaders and Scientific Observers

1	Prof. Madhavan Mukund Chennai Mathematical Institute, Chennai	Leader	
2	Mr. Jatin Yadav Indian Institute of Technology Delhi, Delhi	Deputy Leader	

**Homi Bhabha Centre for Science Education
Tata Institute of Fundamental Research**
V. N. Purav Marg, Mankhurd, Mumbai – 400 088

Telephone: 91-22-2556 2132, 2507 2204, 2507 2205,
Web: www.hbcse.tifr.res.in

**TIFR Endowment Fund
Tata Institute of Fundamental Research**
Colaba, Mumbai – 400 005

Telephone: 91-22-2278 2500/2669
Web: www.tifr.res.in

Infosys Foundation
Neralu, #1/2 (1878), 11th Main,
39th Cross, 4th T Block, Jayanagar,
Bangalore 560011, Karnataka

Telephone: 91-80-26534653 / 41261700
Web: www.infosys.com/infosys-foundation/

PROGRAMME

Scientific Talks (09:30 – 11:30 hrs)

- 09:30 – 10:30 hrs : Astronomy from Space: The India Story
Prof. Dipankar Bhattacharya
Ashoka University, Sonapat
- 10:30 – 11:30 hrs : Artificial Intelligence: An Overview
and Applications in Healthcare
Prof. Sanghamitra Bandyopadhyay
Indian Statistical Institute, Kolkata
- 11:30 – 12:00 hrs : Break

Award Function (12:00 – 13:30 hrs)

- Welcome : **Prof. Arnab Bhattacharya**
Centre Director, HBCSE
- Distribution of awards &
Address by Chief Guest : **Prof. H. C. Pradhan**
*Formerly, Senior Professor and Centre Director
Homi Bhabha Centre for Science Education*
- Vote of Thanks : **Prof. Anwesh Mazumdar**
National Coordinator, Science Olympiads
- Venue : V. G. Kulkarni Auditorium
Homi Bhabha Centre for Science Education, TIFR
V. N. Purav Marg, Mankhurd, Mumbai - 400 088
www.hbcse.tifr.res.in