

IPPOG

International Particle Physics Outreach Group (IPPOG) Collaboration)

IPPOG : Global network of particle physicists active in education and outreach

Main aims: (1) Networking and coordination of global activities, (2) Exchange information, experiences and best practices in outreach activities (3) Share resources

Members : **24 country** representatives, **5 experiments**, **1 international laboratory (CERN)**

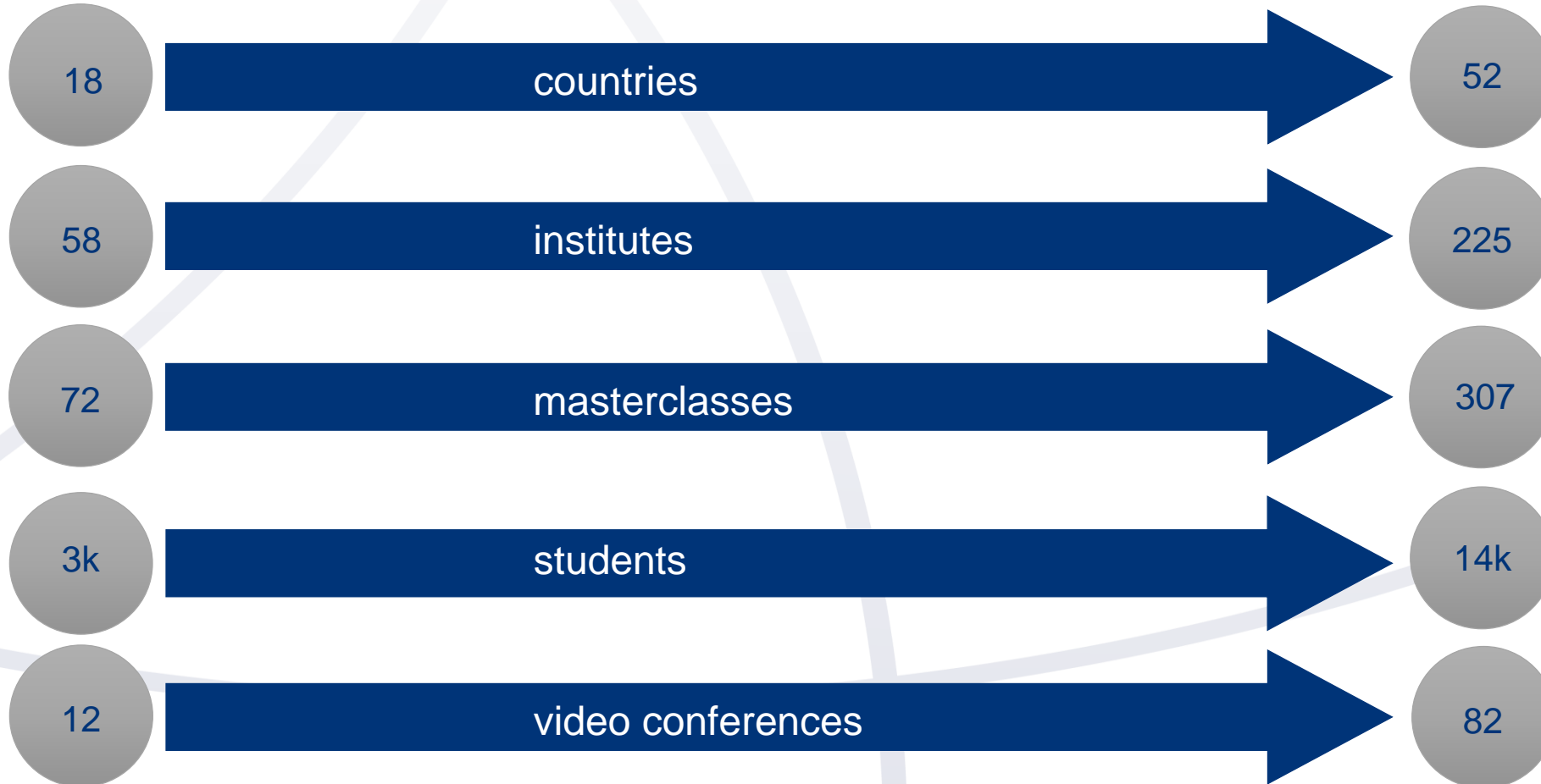
Flagship activity : **International particle physics masterclasses**

First IPPOG Meeting Sep. 1997 at CERN, DG Chris Llewellyn-Smith: *"the particle physics community has a moral obligation to inform the public on its activities. To do this well experiences must be shared among countries in view of the need to optimize the use of resources"*



Statistics International Masterclasses

2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018



Girls, do Physics!

Inspiring and empowering girls around the world to engage in physics or related STEM subjects.

Girls, do Physics! is an Instagram campaign organised by the International Particle Physics Outreach Group (IPPOG) to inspire girls to become interested in and study physics and related STEM subjects and break the stereotype that physics is more suitable for boys.

The campaign will run between February 11, the UN International Day of Women and Girls in Science, and March 8, the International Day of Women.

- Particles4U (Deutsch)
- Particles4U (Español)
- Particles4U (Français)
- Particles4U (Italiano)
- Particles4U (Nederlands)
- Particles4U (Norsk)
- Particles4U (Polski)
- Particles4U (Portugués)
- Particles4U (Slovenčina)
- Particles4U (Slovenščina)
- Particles4U (Svenska)
- Particles4U (Česky)
- Particles4U (Ελληνικά)
- Particles4U (Български)
- Particles4U (עברית)
- Particles4U (日本語: ほんご)

Particles4U (English)

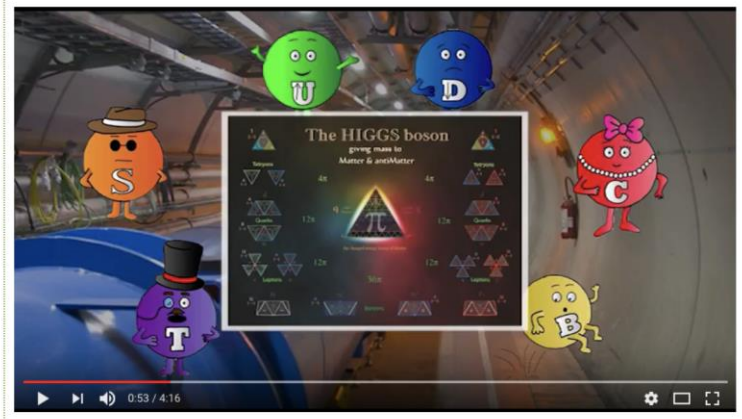
Announcing: Winners of the 2018 Particles4U Competition

Congratulations to all participants of this year's **Particles4U Competition**. We received a total of 77 entries from 15 countries spanning the globe: **Austria, Brazil, Bulgaria, Colombia, France, Greece, Iran, Italy, Japan, Philippines, Poland, Slovakia, South Africa, Spain, and the United States.**

The jury was impressed by the quality of the projects and found it very difficult to decide on the winners. The criteria applied for the final selection were: quality, originality, participation, physics, feasibility, and overall impact of the project. Two winners were selected from each category.

Primary School (Age 12 and under) Winners

2nd and 6th Primary Schools of Artemida, Athens, Greece



Students from the 2nd and 6th primary schools of **Artemida**, a region near **Athens, Greece** combined particle physics with humor and to imagine a dialogue among particles. Their video is called **"The Quark Show."**

- Award:** A school visit from a particle physicist, an award certificate, and a special gift from CERN for each of the participants.

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Learning Topics

- ▶ Physics
- ▶ Technology
- ▶ International Collaboration
- ▶ Broader Impacts

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6 to 9 years

Benefits through this program

- Flagship program - International Masterclass** can be brought to India: Allow school and college students to access LHC and several other mega sciences data and learn aspects of frontier science. Such classes are held in several countries at different times of the year and have been a huge success. For example, In 2018, 10 masterclasses were attended by over 14,000 students from 225 institutes in 52 nations in the entire year.
- Access and Sharing of outreach resources** (Like the ones in Vigyan Samagam and more)
- Maximum the impact of mega science projects:** The mega sciences projects require substantial funding and investments. This collaboration will allow to maximize the impact of education and outreach efforts related to particle physics
- Foster the acceptance and value of the scientific method and evidence-based decision making in society.**



INTERNATIONAL PARTICLE PHYSICS OUTREACH GROUP

Addendum No. 22

to the

Memorandum of Understanding (MoU) for the International Particle Physics Outreach Group (IPPOG) Collaboration

on the

Accession of the National Institute of Science Education and Research of India

On behalf of the IPPOG Collaboration, the Chairpersons Pedro Abreu and Steven Goldfarb hereby certify that at the 11th IPPOG Collaboration Board Meeting held on 19th of November, 2021, the Collaboration Board has decided to admit the National Institute of Science Education and Research of India (NISER), as a representative of India concerning outreach and education activities related to particle and astroparticle physics and associated technologies, to the IPPOG Collaboration.

Professor Bedangadas Mohanty, Dean of Faculty of the National Institute of Science Education and Research of India, hereby accepts that NISER become a Member of the IPPOG Collaboration and accepts all the rights and obligations contained in the Memorandum of Understanding of the IPPOG Collaboration.

This Accession document is done in 2 originals in the English language duly signed by the authorised representatives. The membership of the National Institute of Science Education and Research of India, representing India in IPPOG, starts on the 1st of January, 2022.

The annual membership fee for India shall be 3'000 € for the five-year period ending 31 Dec 2026.

On behalf of the National Institute of Science Education and Research of India

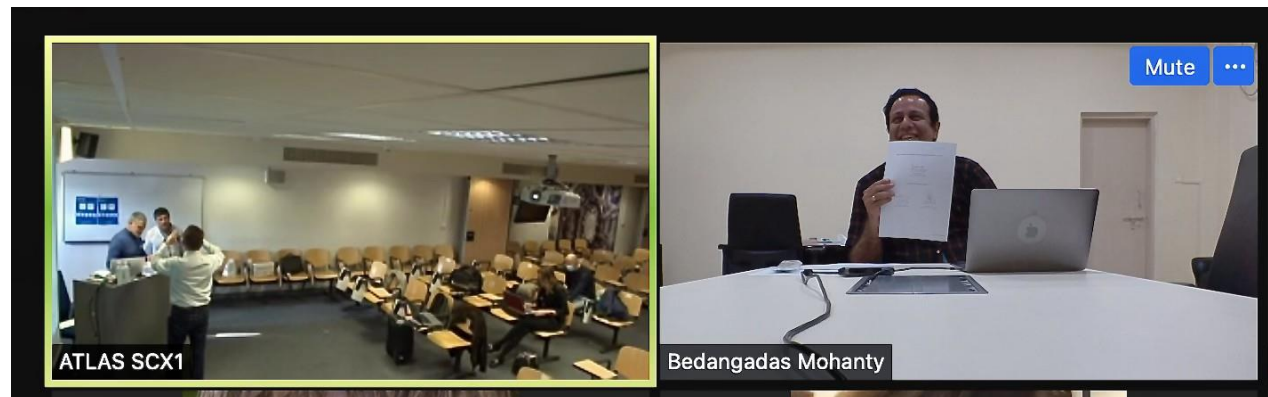
*Bedangadas Mohanty*Professor Bedangadas Mohanty
(NISER Dean of Faculty)19 November 2021
NISER, Jatni, Odisha, India

On behalf of the IPPOG Collaboration

Dr. Steven Goldfarb
(IPPOG Chairperson)
19 November 2021
CERN, Geneva, Switzerland

Prof. Pedro Abreu
(IPPOG Chairperson)
19 November 2021
CERN, Geneva, Switzerland

India Part of IPPOG



Cater to the need for well trained Medical Physicist in the country

1st In Odisha

Country: **India**
Population: **1,339,180,127**
Cancer cases: **1,014,934**
Income group: **Lower middle income (LM)**
Machines per 1 mill.: **less than 1**

■ Radioteletherapy centers: **395**

■ Linac: **325**

■ Radionuclide teletherapy: **333**

■ Particle accelerator: **1**

Number of machines: **666**

Skill set to be developed

1. Use of diagnostic and treatment radiation equipment
2. Quality assure the radiation machines
3. Quality assure radiation treatment planning
4. Quality assure radiation treatment delivery
5. In-depth knowledge on the radiation machine structure and function
6. Understand the principles and physical laws governing the biological effects of radiation
7. Solve radiation therapy technology related problems
8. Appropriate domain knowledge on areas that are clinically applicable
9. Teach junior technicians in radiation therapy
10. Teach trainee oncologist on the relevant aspects of medical physics

Masters Course on Medical Physics

Number of students : 10/year

After BSc + JAM + interview

1st Year – Core Physics

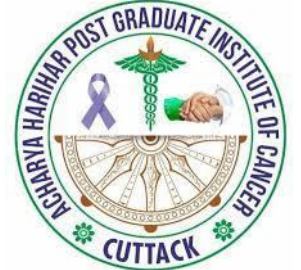
2nd Year – Core Medical Physics

3rd Year – Internship in hospital

Maximum number of cancer patients that can be treated annually is ~ 500 per teletherapy equipment.
Only about ~ 1000 registered Medical Physicists in country

Bedanga Mohanty, NISER

M.S.C Medical and Radiological Physics



WHERE?

Centre for Medical and Radiological Physics, National Institute of Science Education and Research (NISER), Jatni, Odisha, an autonomous institute under the Department of Atomic Energy (DAE), Government of India affiliated to the Homi Bhabha National Institute, Mumbai.

ABOUT

Medical physics is the branch of science that mainly deals with the applications of ionizing radiation in health care through radiotherapy, diagnostic radiology, nuclear medicine and the associated radiological protection. Specifically, for past several decades, ionizing radiation is being used worldwide for the treatment of cancer and diagnosis of the various diseases.

The Master's program is the first of its kind in the State of Odisha. It is also the **first of its kind** at Master's level being conducted by an institution of the Department of Atomic Energy, Government of India.

SCOPE

The demand for number of radiological and medical equipment is tripling, so the number of the medical physicists also will increase by three times. Hence, there is a **need for more medical physicists to be trained.**

Skills developed by students

- ★ Safe use of diagnostic and treatment radiation equipment
- ★ Quality assurance of radiation machines, radiation treatment planning and radiation treatment delivery
- ★ In-depth knowledge on the radiation machine structure and function
- ★ Understanding of principles and physical laws governing the biological effects of radiation
- ★ Solution of radiation therapy technology related problems
- ★ Train junior technicians in radiation therapy and trainee oncologists on the relevant aspects of medical physics
- ★ Innovation in radiation therapy technology to enhance safety, improvement of efficacy and cost effective assurance of service

WHO CAN APPLY AND HOW?

Candidates who wish to apply should meet the minimum criteria below:

1. First class (60% and above) in Bachelor's degree in Physical Sciences or an equivalent degree with Physics as one of the main subjects from a recognized University. ^a
2. Candidates should have JAM 2022 / JEST 2022 scorecards.

Only online applications through the website are accepted.

^aCandidates who are appearing in their Final Examination for Bachelor's Degree can also apply provided they submit an undertaking that they will submit the Qualifying degree certificates by the time of interview.

PROGRAM DETAILS AND SUPPORT

The master's program in medical and radiological physics has been designed according to the syllabus prescribed by the Homi Bhabha National Institute (HBNI), Mumbai. It has a rigorous curriculum with emphasis on physics, radiology and its medical applications.

Degree awarding institute	: Homi Bhabha National Institute, Mumbai
Duration of the course	: 2 years Master's program and 1 year mandatory internship
Total No. of seats	: 10
Minimum qualification and selection	: 60% marks in B. Sc with physics as a main course. The shortlisting will be based on JAM 2022 / JEST 2022 marks, followed by interview for selection
Fellowship	: Rs. 16,000/- p.m. + HRA and Contingency as per DAE rules, during master's program
Internship hospitals as per AERB guidelines	: All India Institute of Medical Sciences, Bhubaneswar and Acharya Harihar Post Graduate Institute of Cancer, Cuttack

UMBRELLA INSTITUTIONS



Department of Atomic Energy (DAE)

Anushakti Bhavan, Chhatrapati Shivaji Maharaj Marg, Mumbai, Maharashtra 400001



Homi Bhabha National Institute (HBNI)

2nd floor, BARC Training School Complex, Anushaktinagar, Mumbai, Maharashtra 400094



Atomic Energy Regulatory Board (AERB)

Niyamak Bhavan, Anushakti Nagar, Mumbai, Maharashtra 400094, India

COLLABORATING INSTITUTIONS



All India Institute of Medical Sciences (AIIMS), Bhubaneswar

Sijua, Patrapada, Bhubaneswar, Odisha 751019



Acharya Harihar Post Graduate Institute of Cancer (AHPGIC)

SCB Medical Road, Mangalabag, Medical college post office, Cuttack, Odisha 753007



Tata Memorial Centre (TMC)

Dr. E Borges Road, Parel, Mumbai, Maharashtra 400 012

IMPORTANT DATES

Date of Activation of online application	: 16 th April 2022
Last date of online application	: 15 th May 2022
Announcement of shortlisted applicants	: 31 st May 2022
Date of interview	: 1 st - 4 th July 2022
Announcement of final selection list	: 5 th July 2022

WEBSITE

For more details and application link, visit <https://www.niser.ac.in/apply-application>



CONTACT

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ASSURED INTERNSHIP

Bedanga Mohanty, NISER

Thanks

IPPOG

CMRP

Speakers

All participants

All volunteers