International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

1. WILHELM RÖNTGEN

The German physicist, Wilhelm Conrad Röntgen was the first person to produce and detect electromagnetic radiation in a wavelength range today known as x-rays. His discovery earned him the Rumford Medal of the Royal Society of London in 1896 and the first Nobel Prize in Physics in 1901.

In 1895, he was examining a phenomenon that occurred when passing an electric current through a gas in an extremely low pressure tube. He soon discovered that rays (which he believed to be cathode rays) were having a fluorescent effect on cardboard coated with barium platinocyanide that he had placed around the tubes.

Röntgen conducted more experiments by placing different objects of varying sizes between the path of the rays and photographic plates. When he developed the plates he found that the thicker objects blocked more rays than thinner objects. He then asked his wife to place her hand in the rays' path. The image cast on the photographic plates showed shadows cast by her bones and a ring she was wearing. Röntgen determined that these were not cathode rays. In fact, they were a something completely new. He called these new rays, "x-rays."

As part of IDMP2023, we are running a quiz based on the theme "Standing on the shoulders of Giants".
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these 'Giants of Medical Physics'. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

2. MARIE CURIE

Marie Curie was a Polish-born physicist and chemist and one of the most famous scientists of her time. Together with her husband Pierre, she was awarded the Nobel Prize in 1903, and she went on to win another in 1911. The Curies worked together investigating radioactivity, building on the work of the German physicist Roentgen and the French physicist Becquerel. In July 1898, the Curies announced the discovery of a new chemical element, polonium. At the end of the year, they announced the discovery of another, radium.

The Curies, along with Becquerel, were awarded the Nobel Prize for Physics in 1903. Pierre's life was cut short in 1906 and Marie took over his teaching post, becoming the first woman to teach at the Sorbonne, and devoted herself to continuing the work that they had begun together. She received a second Nobel Prize, for Chemistry, in 1911.

The Curie's research was crucial in the development of x-rays in surgery. During World War One, Curie helped to equip ambulances with x-ray equipment, which she herself drove to the front lines. The International Red Cross made her head of its radiological service and she held training courses for medical orderlies and doctors in the new techniques.

As part of IDMP2023, we are running a quiz based on the theme “Standing on the shoulders of Giants“.
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these ‘Giants of Medical Physics‘. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

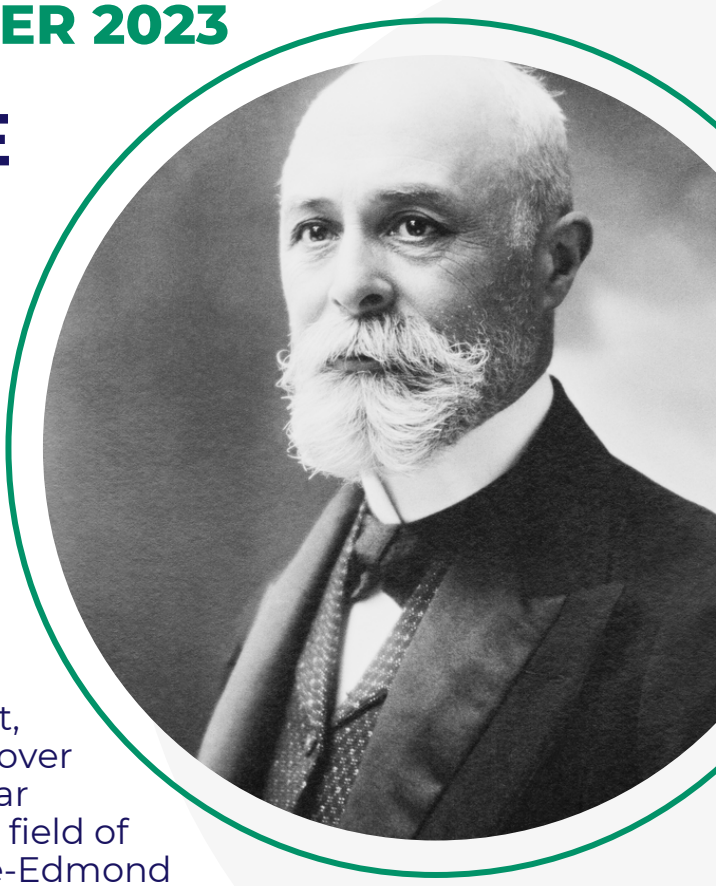
IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS



3. HENRI BECQUEREL

December 15, 1852, was the birthday of French physicist Antoine Henri Becquerel, who discovered a completely unknown property of matter in March 1896. Henri Becquerel was a French engineer, physicist, Nobel laureate, and the first person to discover radioactivity. His grandfather, Antoine-César (1788–1878), was one of the founders of the field of electrochemistry, and his father, Alexandre-Edmond (1820–91), made important studies of light phenomena. Henri likewise studied phosphorescent materials as well as uranium compounds and employed photography in his experiments.

In 1896, Henri Becquerel was using naturally fluorescent minerals to study the properties of x-rays. He found that the element uranium (in a sample of pitchblende) emitted invisible rays that could darken a photographic plate. His 1901 report of a burn caused by a sample of Marie Curie's radium that he carried in his vest pocket led to investigations by physicians and ultimately the medical use of radioactive substances.

In 1903 he shared a Nobel Prize for Physics with the Curies. The unit of radioactivity, the becquerel (Bq), is named for him.

As part of IDMP2023, we are running a quiz based on the theme "Standing on the shoulders of Giants".
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these 'Giants of Medical Physics'. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

4. ROLF SIEVERT

Rolf Sievert was born in Sweden to German parents on May 6, 1896. With the increasing use of X-rays during and after the First World War, hematologic diseases began to occur frequently among those handling X-rays, with a growing number of deaths. This prompted discussion about radiation protection.

In 1921, Sievert theorized measurements on the spatial distribution of radiation from various radium compounds. This would become known as the Sievert Integration Theory. This is when he began to emphasize radiation protection and the need to limit professionals' exposure to radiation. He used a portable dosimeter when visiting hospitals, to measure tube voltage, tube current, and dose rate. In 1928, he played the central role in the adoption of the Roentgen as the international unit and in recommendations for protecting medical radiology practitioners from radiation. Soon, he was consulting on how to build more protective chambers, including pioneering the use of thick, iron-ore concrete walls as radiation shields.

In honor of his lifetime achievements, the unit for the dose of radiation affecting the human body (equivalent dose) was named the Sv (Sievert), in 1979.

As part of IDMP2023, we are running a quiz based on the theme "Standing on the shoulders of Giants".
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these 'Giants of Medical Physics'. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

5. EDITH QUIMBY

Edith Quimby was a pioneer in the field of radiation physics, a founder of nuclear medicine, and is considered the first female medical physicist in the United States.

She was born in 1891 in Rockford, Illinois, and earned degrees in physics and mathematics from Whitman College and the University of California, Berkeley. Her work involved developing diagnostic and therapeutic applications of X-rays. One of her main concerns was protecting both those handling the radioactive material and making sure that those being treated were given the lowest dose necessary.

Edith Quimby helped found the Radiological Research Laboratory at Columbia University, was the first female physicist president of the American Radium Society and was influential in the founding of the American Association of Physicists in Medicine.

She was a professor at both Cornell University Medical College and Columbia University, and she authored several books throughout her career, including the classic Physical Foundations of Radiology (1944), and over 70 scientific papers.

As part of IDMP2023, we are running a quiz based on the theme "Standing on the shoulders of Giants".
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these 'Giants of Medical Physics'. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

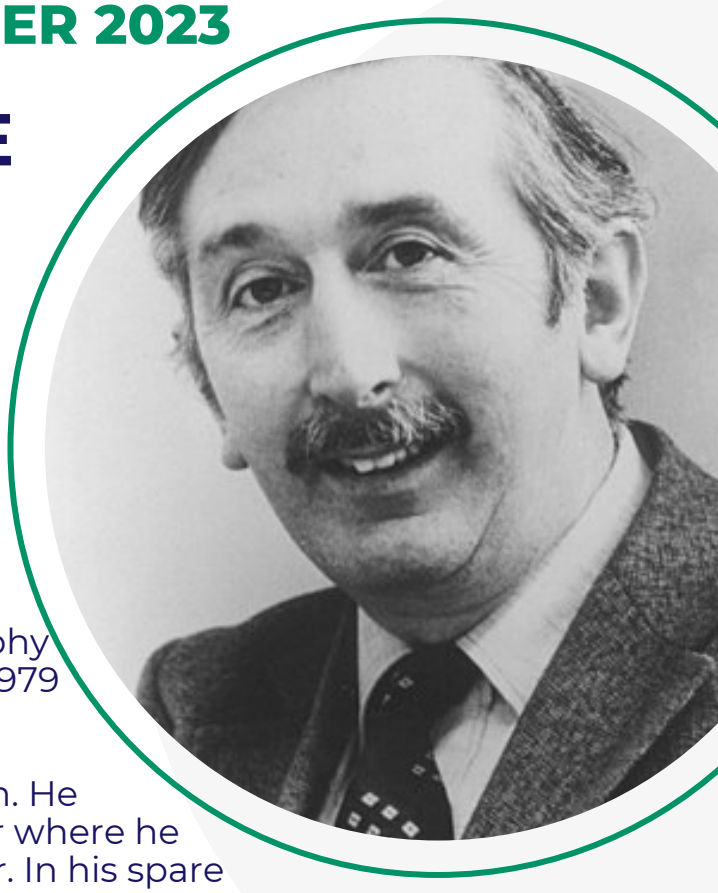
IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS



6. GODFREY HOUNSFIELD

Godfrey Newbold Hounsfield (1919-2004) was an English electrical engineer, famous for the invention of computerised tomography (CT) for which he shared the Nobel prize in 1979 with Allan MacLeod Cormack.

Hounsfield was born in Newark, Nottingham. He joined the RAF during the second world war where he was taken on as a radar mechanic instructor. In his spare time he built a oscilloscope and demonstration equipment as aids for people on electronics and radar courses. His work was noticed by Air Vice-Marshall Kennedy, who got him a grant to study at the House Electrical Engineering College in London.

The idea for computed topography first came to him in 1967, initially his idea was not related to medicine but a realisation that you could see into a box by taking readings at all angles around it. He further developed this idea to record the images on sensors as opposed to an X ray films to create multiple slices; by placing these slices together it was possible to create a three dimensional image. On receiving his Nobel prize he offered the following advice, “Don’t worry if you can’t pass exams, so long as you feel you have understood the subject.” The Hounsfield scale is named after him.

As part of IDMP2023, we are running a quiz based on the theme “Standing on the shoulders of Giants“.
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these ‘Giants of Medical Physics‘. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

7. ALLAN MACLEOD CORMACK

Allan MacLeod Cormack, born February 23, 1924, was a South African American physicist who won the 1979 Nobel Prize in Physiology or Medicine (along with Godfrey Hounsfield) for his work on X-ray computed tomography.

This was a significant and unusual achievement since Cormack did not hold a doctoral degree in any scientific field.

Although he was mainly working on particle physics, Cormack's side interest in x-ray technology led him to develop the theoretical underpinnings of CT scanning. His results were subsequently published in two papers in the Journal of Applied Physics in 1963 and 1964. These papers generated little interest until Hounsfield and colleagues built the first CT scanner in 1971, taking Cormack's theoretical calculations into a real application.

For their independent efforts, Cormack and Hounsfield shared the 1979 Nobel Prize in Physiology or Medicine. It is notable that the two built a very similar type of device without collaboration in different parts of the world. He was member of the International Academy of Science, Munich. In 1990, he was awarded the National Medal of Science.

As part of IDMP2023, we are running a quiz based on the theme “Standing on the shoulders of Giants“.
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these ‘Giants of Medical Physics‘. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

8. ROSALIND FRANKLIN

Rosalind Elsie Franklin, born 25 July 1920, was a British chemist and X-ray crystallographer whose work was central to the understanding of the molecular structures of DNA, RNA, viruses, coal, and graphite. Although her works on coal and viruses were appreciated in her lifetime, Franklin's contributions to the discovery of the structure of DNA were largely unrecognized during her life.

Franklin is best known for her work on the X-ray diffraction images of DNA while at King's College London, particularly Photo 51, taken by her student Raymond Gosling. This led to the discovery of the DNA double helix for which Francis Crick, James Watson, and Maurice Wilkins shared the Nobel Prize in Physiology or Medicine in 1962. Watson suggested that Franklin would have ideally been awarded a Nobel Prize in Chemistry, along with Wilkins but the Nobel Committee generally did not make posthumous nominations.

On the day before she was to unveil the structure of tobacco mosaic virus at an international fair in Brussels, Franklin died of ovarian cancer at the age of 37 in 1958. Her team member Aaron Klug continued her research, winning the Nobel Prize in Chemistry in 1982.

As part of IDMP2023, we are running a quiz based on the theme “Standing on the shoulders of Giants“.
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these ‘Giants of Medical Physics‘. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

9. JOHN MALLARD

John Mallard was born in Northampton, UK in 1927. In 1959, his team built the first whole-body isotope scanner in the UK. Mallard played a crucial role in developing two of the world's most important medical technologies – Magnetic Resonance Imaging (MRI) and Positron Emission Tomography (PET).

During 1970s, Mallard created a team of specialists led by Dr Jim Hutchinson. This team developed an unique MRI scanner (0.04 Tesla) and applied it to imaging of laboratory animals. The team also built the first in the world full-body MRI scanner and on 26 April 1980 they scanned the first patient. Mallard pioneered research into PET imaging when the technology was in its infancy. In his first lecture after joining the staff at Aberdeen University he correctly predicted that PET would become one of the most powerful tools for studying human diseases.

John Mallard was very active in the international development of medical physics and biomedical engineering. He took part in the establishment of both – the International Organisation for Medical Physics (IOMP) and the International Union for Physical and Engineering Sciences in Medicine (IUPESM).

As part of IDMP2023, we are running a quiz based on the theme "Standing on the shoulders of Giants".
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these 'Giants of Medical Physics'. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

10. PATTIPATI RAMAIAH NAIDU

Pattipati Ramaiah Naidu (June 1904 - June 6, 1991) was a pioneering Indian nuclear Physicist, Medical Scientist and Radiologist who helped established the foundations of medical physics.

He worked with Marie Curie at the Radium Institute, Paris for his Doctoral thesis. The thesis covered ionization curve of alpha rays in pure gases including Krypton and Xenon. He published his first research papers in French in the Journal of Physics and Radium, Paris in 1934. In 1936, Tata Trust, Mumbai offered Naidu the post of Chief Physicist at Tata Memorial Hospital, Bombay and sought his services to help establish India's first Radon production facility for treatment in Cancer Management.

During World War II, the process of decommissioning and re-commissioning the radon plant led to Naidu's bone marrow getting damaged and he developed cancer due to his over exposure to radium. Naidu recovered from the radium overexposure and bone marrow damage. Thereafter, he joined UNESCO as Programme Specialist in the Department of Natural Science where he initiated and implemented several projects for the improvement of science education.

As part of IDMP2023, we are running a quiz based on the theme “Standing on the shoulders of Giants“.
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these ‘Giants of Medical Physics‘. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME

International Organization for Medical Physics

IOMP

60TH ANNIVERSARY

INTERNATIONAL DAY OF MEDICAL PHYSICS

7TH NOVEMBER 2023

STANDING ON THE SHOULDERS OF GIANTS

11. LAUTERBUR AND MANSFIELD

Paul Lauterbur (right, born 1929), Urbana, Illinois, USA, discovered the possibility to create a two-dimensional picture by introducing gradients in the magnetic field. By analysis of the characteristics of the emitted radio waves, he could determine their origin. This made it possible to build up two-dimensional pictures of structures that could not be visualized with other methods.

Peter Mansfield (left, born 1933), Nottingham, England, further developed the utilization of gradients in the magnetic field. He showed how the signals could be mathematically analysed, which made it possible to develop a useful imaging technique. Mansfield also showed how extremely fast imaging could be achievable. This became technically possible within medicine a decade later.

Lauterbur and Mansfield were jointly award the Nobel Prize in Physiology or Medicine 2003 ‘for their discoveries concerning magnetic resonance imaging’. From their pioneering contributions, clinical applications of MRI became a reality from the 1970s onwards, developing rapidly since the 1980s.

As part of IDMP2023, we are running a quiz based on the theme “Standing on the shoulders of Giants“.
Around 11 exhibitor stalls are 12 famous physicists. **Scan the QR code** on the right and answer the multi-choice questions about these ‘Giants of Medical Physics‘. All the information you will need can be found in the bio for each physicist. One randomly drawn winner will be announced at the closing of the conference.
Entries close at the end of afternoon tea on 8th November.

SCAN ME