

## Physics Nobel Prizes at a Glance

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### Abstract

The aim of this compilation is to present all the Physics Nobel prizes to the curious readers in a tabular form (easy to read and find) who are not only interested to know about the Nobel Laureates but also about the growth of physics concepts with time which have attracted the awards.

**Keywords:** Alfred Nobel, Nobel Prize, Physics

The Nobel Prize in Physics is a yearly award given by the Royal Swedish Academy of Sciences for those who conferred the most outstanding contributions for mankind in the field of physics [1]. It is one of the five Nobel Prizes established by the will of Alfred Nobel in 1895 and awarded since 1901; the others being the Nobel Prize in Chemistry, Nobel Prize in Literature, Nobel Peace Prize, and Nobel Prize in Physiology or Medicine. The first Nobel Prize in Physics was awarded to physicist Wilhelm Röntgen in recognition of the extraordinary services he has rendered by the discovery of the remarkable rays (or x-rays). This award is administered by the Nobel Foundation and widely regarded as the most prestigious award that a scientist can receive in physics. It is presented in Stockholm at an annual ceremony on 10 December, the anniversary of Nobel's death. Through 2017, a total of 111 Physics Nobel Prizes have been awarded to a total of 207

Physics Nobel Laureates (as John Bardeen has been awarded twice there are 206 individuals who have been awarded the Nobel Prize in Physics since 1901) and only two women have won the Nobel Prize in Physics: Marie Curie in 1903, and Maria Goeppert Mayer in 1963.



There is no other prize in the intellectual realm with the prestige of the Nobel Prizes. They also have a visibility that can hardly be compared to any other. In an age of science and technology in which we are gradually losing whole sets of values, fundamentally humanistic ones, the Nobel Prizes are one of our last bastions. We seek in them a reference, not only of excellence, but of honesty, enthusiasm, commitment to ideals, that inspires both laymen and professionals. Many of the winners were recognized among his peers as unique individuals, long before they were awarded the Prize. And afterwards they have continued to behave like people with great human qualities. That is why knowing about them (Nobel Laureates) and their contribution

(awarded discoveries) towards science and technology can be a tremendous inspiration and example for the young students from all over the world. Of all the Nobel Prizes have a more fundamental character and there is a degree of truth associated with them and they all help to build what we might call the “Great Humanity”. Their findings not only generate progress and allow society to develop, but also help us to know ourselves. Detailed knowledge about the laws and mechanisms governing Nature may have no immediate application, but make us aware of our own place in the Universe, help us to be more modest, more aware of our environment.

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#### **Some most interesting facts about Nobel Prizes:**

- In the statutes of the Nobel Foundation it says: "If none of the works under consideration is found to be of the importance indicated in the first paragraph, the prize money shall be reserved until the following year. If, even then, the prize cannot be awarded, the amount shall be added to the Foundation's restricted funds."
- Posthumous nominations can't be made for Nobel Prizes. If during consideration, the nominee dies, his name is removed. But if a person dies after being announced as the winner, a posthumous award is given.
- More than three people can't share a Nobel Prize.

- The Curies (Marie and Pierre Curie) comprised a very successful 'Nobel Prize family'. Marie Curie herself was awarded two Nobel Prizes - In 1903, she along with Pierre Curie (husband) was awarded half the Nobel Prize in Physics. In 1911 she was awarded the Nobel Prize in Chemistry. One of Marie and Pierre Curie's daughters, Irène Joliot-Curie, was awarded the Nobel Prize in Chemistry in 1935 together with her husband Frédéric Joliot.)
- To date, the youngest Nobel Laureate in Physics is Lawrence Bragg, who was 25 years old when he was awarded the Nobel Prize together with his father in 1915.
- The average age of Nobel laureates, across all prize categories, is 59. But the oldest prizewinner was 90-year-old Leonid Hurwicz, who won the Economics Nobel (technically called the Sveriges Riksbank Prize in Economics Sciences in Memory of Alfred Nobel) in 2007. The youngest winner is Malala Yousafzai. She won the Peace Prize in 2014 when she was 17 years old.
- There is often a substantial delay between when a scientist makes a Nobel-worthy discovery and receiving the award—the average time varies from 20 to 30 years, depending on the award category. Sometimes the wait is even longer
- Father & son awarded the Nobel Prize in Physics:  
William Bragg and Lawrence Bragg, 1915  
J. J. Thomson, 1906 and George Paget Thomson, 1937  
Niels Bohr, 1922 and Aage N. Bohr, 1975  
Manne Siegbahn, 1924 and Kai M. Siegbahn, 1981

Sr.No.	Year of Prize	Prize winners	Discovery
1.	2017	Rainer Weiss, Barry C. Barish and Kip S. Thorne	"for decisive contributions to the LIGO detector and the observation of gravitational waves"
2.	2016	David J. Thouless, F. Duncan M. Haldane and J. Michael Kosterlitz	"for theoretical discoveries of topological phase transitions and topological phases of matter"
3.	2015	Takaaki Kajita and Arthur B. McDonald	"for the discovery of neutrino oscillations, which shows that neutrinos have mass"
4.	2014	Isamu Akasaki, Hiroshi Amano and Shuji Nakamura	"for the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources"
5.	2013	François Englert and Peter W. Higgs	"for the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider"
6.	2012	Serge Haroche and David J. Wineland	"for ground-breaking experimental methods that enable measuring and manipulation of individual quantum systems"
7.	2011	Saul Perlmutter, Brian P. Schmidt and Adam G. Riess	"for the discovery of the accelerating expansion of the Universe through observations of distant supernovae"
8.	2010	Andre Geim and Konstantin Novoselov	"for groundbreaking experiments regarding the two-dimensional material graphene"
		Charles Kuen Kao	"for groundbreaking achievements concerning the transmission of light in fibers for optical communication"
		Willard S. Boyle and George E. Smith	"for the invention of an imaging semiconductor circuit - the CCD sensor"
		Yoichiro Nambu	"for the discovery of the mechanism of spontaneous broken symmetry in subatomic physics"
		Makoto Kobayashi and Toshihide Maskawa	"for the discovery of the origin of the broken symmetry which predicts the existence of at least three families of quarks in nature"
11.	2007	Albert Fert and Peter Grünberg	"for the discovery of Giant Magnetoresistance"
12.	2006	John C. Mather and George F. Smoot	"for their discovery of the blackbody form and anisotropy of the cosmic microwave background radiation"
		Roy J. Glauber	"for his contribution to the quantum theory of optical coherence"
		John L. Hall and Theodor W. Hänsch	"for their contributions to the development of laser-based precision spectroscopy, including the optical frequency comb technique"
14.	2004	David J. Gross, H. David Politzer and Frank Wilczek	"for the discovery of asymptotic freedom in the theory of the strong interaction"
15.	2003	Alexei A. Abrikosov, Vitaly L. Ginzburg and Anthony J. Leggett	"for pioneering contributions to the theory of superconductors and superfluids"
		Raymond Davis Jr. and Masatoshi Koshiba	"for pioneering contributions to astrophysics, in particular for the detection of cosmic neutrinos"
		Riccardo Giacconi	"for pioneering contributions to astrophysics, which have led to the discovery of cosmic X-ray sources"
17.	2001	Eric A. Cornell, Wolfgang Ketterle and Carl E. Wieman	"for the achievement of Bose-Einstein condensation in dilute gases of alkali atoms, and for early

			fundamental studies of the properties of the condensates"
		Zhores I. Alferov and Herbert Kroemer	"for basic work on information and communication technology"
		Jack S. Kilby	"for his part in the invention of the integrated circuit"
19.	1999	Gerardus 't Hooft and Martinus J.G. Veltman	"for elucidating the quantum structure of electroweak interactions in physics"
20.	1998	Robert B. Laughlin, Horst L. Störmer and Daniel C. Tsui	"for their discovery of a new form of quantum fluid with fractionally charged excitations"
21.	1997	Steven Chu, Claude Cohen-Tannoudji and William D. Phillips	"for development of methods to cool and trap atoms with laser light"
22.	1996	David M. Lee, Douglas D. Osheroff and Robert C. Richardson	"for their discovery of superfluidity in helium-3"
		Martin L. Perl	"for the discovery of the tau lepton"
		Frederick Reines	"for the detection of the neutrino"
		Bertram N. Brockhouse	"for the development of neutron spectroscopy"
		Clifford G. Shull	"for the development of the neutron diffraction technique"
25.	1993	Russell A. Hulse and Joseph H. Taylor Jr.	"for the discovery of a new type of pulsar, a discovery that has opened up new possibilities for the study of gravitation"
26.	1992	Georges Charpak	"for his invention and development of particle detectors, in particular the multiwire proportional chamber"
27.	1991	Pierre-Gilles de Gennes	"for discovering that methods developed for studying order phenomena in simple systems can be generalized to more complex forms of matter, in particular to liquid crystals and polymers"
28.	1990	Jerome I. Friedman, Henry W. Kendall and Richard E. Taylor	"for their pioneering investigations concerning deep inelastic scattering of electrons on protons and bound neutrons, which have been of essential importance for the development of the quark model in particle physics"
		Norman F. Ramsey	"for the invention of the separated oscillatory fields method and its use in the hydrogen maser and other atomic clocks"
		Hans G. Dehmelt and Wolfgang Paul	"for the development of the ion trap technique"
30.	1988	Leon M. Lederman, Melvin Schwartz and Jack Steinberger	"for the neutrino beam method and the demonstration of the doublet structure of the leptons through the discovery of the muon neutrino"
31.	1987	J. Georg Bednorz and K. Alexander Müller	"for their important break-through in the discovery of superconductivity in ceramic materials"
		Ernst Ruska	"for his fundamental work in electron optics, and for the design of the first electron microscope"
		Gerd Binnig and Heinrich Rohrer	"for their design of the scanning tunneling microscope"
33.	1985	Klaus von Klitzing	"for the discovery of the quantized Hall effect"
34.	1984	Carlo Rubbia and Simon van der Meer	"for their decisive contributions to the large project, which led to the discovery of the field particles W and Z, communicators of weak interaction"
		Subramanyan Chandrasekhar	"for his theoretical studies of the physical processes of importance to the structure and evolution of the stars"

		William Alfred Fowler	"for his theoretical and experimental studies of the nuclear reactions of importance in the formation of the chemical elements in the universe"
36.	1982	Kenneth G. Wilson	"for his theory for critical phenomena in connection with phase transitions"
		Nicolaas Bloembergen and Arthur Leonard Schawlow	"for their contribution to the development of laser spectroscopy"
		Kai M. Siegbahn	"for his contribution to the development of high-resolution electron spectroscopy"
38.	1980	James Watson Cronin and Val Logsdon Fitch	"for the discovery of violations of fundamental symmetry principles in the decay of neutral K-mesons"
39.	1979	Sheldon Lee Glashow, Abdus Salam and Steven Weinberg	"for their contributions to the theory of the unified weak and electromagnetic interaction between elementary particles, including, inter alia, the prediction of the weak neutral current"
		Pyotr Leonidovich Kapitsa	"for his basic inventions and discoveries in the area of low-temperature physics"
		Arno Allan Penzias and Robert Woodrow Wilson	"for their discovery of cosmic microwave background radiation"
41.	1977	Philip Warren Anderson, Sir Nevill Francis Mott and John Hasbrouck van Vleck	"for their fundamental theoretical investigations of the electronic structure of magnetic and disordered systems"
42.	1976	Burton Richter and Samuel Chao Chung Ting	"for their pioneering work in the discovery of a heavy elementary particle of a new kind"
43.	1975	Aage Niels Bohr, Ben Roy Mottelson and Leo James Rainwater	"for the discovery of the connection between collective motion and particle motion in atomic nuclei and the development of the theory of the structure of the atomic nucleus based on this connection"
44.	1974	Sir Martin Ryle and Antony Hewish	"for their pioneering research in radio astrophysics: Ryle for his observations and inventions, in particular of the aperture synthesis technique, and Hewish for his decisive role in the discovery of pulsars"
		Leo Esaki and Ivar Giaever	"for their experimental discoveries regarding tunneling phenomena in semiconductors and superconductors, respectively"
		Brian David Josephson	"for his theoretical predictions of the properties of a supercurrent through a tunnel barrier, in particular those phenomena which are generally known as the Josephson effects"
46.	1972	John Bardeen, Leon Neil Cooper and John Robert Schrieffer	"for their jointly developed theory of superconductivity, usually called the BCS-theory"
47.	1971	Dennis Gabor	"for his invention and development of the holographic method"
		Hannes Olof Gösta Alfvén	"for fundamental work and discoveries in magnetohydro-dynamics with fruitful applications in different parts of plasma physics"
		Louis Eugène Félix Néel	"for fundamental work and discoveries concerning antiferromagnetism and ferrimagnetism which have led to important applications in solid state physics"
49.	1969	Murray Gell-Mann	"for his contributions and discoveries concerning the classification of elementary particles and their

			interactions"
50.	1968	Luis Walter Alvarez	"for his decisive contributions to elementary particle physics, in particular the discovery of a large number of resonance states, made possible through his development of the technique of using hydrogen bubble chamber and data analysis"
51.	1967	Hans Albrecht Bethe	"for his contributions to the theory of nuclear reactions, especially his discoveries concerning the energy production in stars"
52.	1966	Alfred Kastler	"for the discovery and development of optical methods for studying Hertzian resonances in atoms"
53.	1965	Sin-Itiro Tomonaga, Julian Schwinger and Richard P. Feynman	"for their fundamental work in quantum electrodynamics, with deep-ploughing consequences for the physics of elementary particles"
54.	1964	Charles Hard Townes, Nicolay Gennadiyevich Basov and Aleksandr Mikhailovich Prokhorov	"for fundamental work in the field of quantum electronics, which has led to the construction of oscillators and amplifiers based on the maser-laser principle"
		Eugene Paul Wigner	"for his contributions to the theory of the atomic nucleus and the elementary particles, particularly through the discovery and application of fundamental symmetry principles"
		Maria Goeppert Mayer and J. Hans D. Jensen	"for their discoveries concerning nuclear shell structure"
56.	1962	Lev Davidovich Landau	"for his pioneering theories for condensed matter, especially liquid helium"
		Robert Hofstadter	"for his pioneering studies of electron scattering in atomic nuclei and for his thereby achieved discoveries concerning the structure of the nucleons"
		Rudolf Ludwig Mössbauer	"for his researches concerning the resonance absorption of gamma radiation and his discovery in this connection of the effect which bears his name"
58.	1960	Donald Arthur Glaser	"for the invention of the bubble chamber"
59.	1959	Emilio Gino Segrè and Owen Chamberlain	"for their discovery of the antiproton"
60.	1958	Pavel Alekseyevich Cherenkov, Il'ja Mikhailovich Frank and Igor Yevgenyevich Tamm	"for the discovery and the interpretation of the Cherenkov effect"
61.	1957	Chen Ning Yang and Tsung-Dao (T.D.) Lee	"for their penetrating investigation of the so-called parity laws which has led to important discoveries regarding the elementary particles"
62.	1956	William Bradford Shockley, John Bardeen and Walter Houser Brattain	"for their researches on semiconductors and their discovery of the transistor effect"
		Willis Eugene Lamb	"for his discoveries concerning the fine structure of the hydrogen spectrum"
		Polykarp Kusch	"for his precision determination of the magnetic moment of the electron"
		Max Born	"for his fundamental research in quantum mechanics, especially for his statistical interpretation of the wavefunction"
		Walther Bothe	"for the coincidence method and his discoveries made therewith"
65.	1953	Frits Zernike	"for his demonstration of the phase contrast method, especially for his invention of the phase contrast

			microscope"
66.	1952	Felix Bloch and Edward Mills Purcell	"for their development of new methods for nuclear magnetic precision measurements and discoveries in connection therewith"
67.	1951	Sir John Douglas Cockcroft and Ernest Thomas Sinton Walton	"for their pioneer work on the transmutation of atomic nuclei by artificially accelerated atomic particles"
68.	1950	Cecil Frank Powell	"for his development of the photographic method of studying nuclear processes and his discoveries regarding mesons made with this method"
69.	1949	Hideki Yukawa	"for his prediction of the existence of mesons on the basis of theoretical work on nuclear forces"
70.	1948	Patrick Maynard Stuart Blackett	"for his development of the Wilson cloud chamber method, and his discoveries therewith in the fields of nuclear physics and cosmic radiation"
71.	1947	Sir Edward Victor Appleton	"for his investigations of the physics of the upper atmosphere especially for the discovery of the so-called Appleton layer"
72.	1946	Percy Williams Bridgman	"for the invention of an apparatus to produce extremely high pressures, and for the discoveries he made therewith in the field of high pressure physics"
73.	1945	Wolfgang Pauli	"for the discovery of the Exclusion Principle, also called the Pauli Principle"
74.	1944	Isidor Isaac Rabi	"for his resonance method for recording the magnetic properties of atomic nuclei"
75.	1943	Otto Stern	"for his contribution to the development of the molecular ray method and his discovery of the magnetic moment of the proton"
76.	1939	Ernest Orlando Lawrence	"for the invention and development of the cyclotron and for results obtained with it, especially with regard to artificial radioactive elements"
77.	1938	Enrico Fermi	"for his demonstrations of the existence of new radioactive elements produced by neutron irradiation, and for his related discovery of nuclear reactions brought about by slow neutrons"
78.	1937	Clinton Joseph Davison and George Paget Thomson	"for their experimental discovery of the diffraction of electrons by crystals"
		Victor Franz Hess	"for his discovery of cosmic radiation"
		Carl David Anderson	"for his discovery of the positron"
80.	1935	James Chadwick	"for the discovery of the neutron"
81.	1933	Erwin Schrödinger and Paul Adrien Maurice Dirac	"for the discovery of new productive forms of atomic theory"
82.	1932	Werner Karl Heisenberg	"for the creation of quantum mechanics, the application of which has, inter alia, led to the discovery of the allotropic forms of hydrogen"
83.	1930	Sir Chandrasekhara Venkata Raman	"for his work on the scattering of light and for the discovery of the effect named after him"
84.	1929	Prince Louis-Victor Pierre Raymond de Broglie	"for his discovery of the wave nature of electrons"
85.	1928	Owen Willans Richardson	"for his work on the thermionic phenomenon and especially for the discovery of the law named after him"
		Arthur Holly Compton	"for his discovery of the effect named after him"
		Charles Thomson Rees Wilson	"for his method of making the paths of electrically"

			charged particles visible by condensation of vapour"
87.	1926	Jean Baptiste Perrin	"for his work on the discontinuous structure of matter, and especially for his discovery of sedimentation equilibrium"
88.	1925	James Franck and Gustav Ludwig Hertz	"for their discovery of the laws governing the impact of an electron upon an atom"
89.	1924	Karl Manne Georg Siegbahn	"for his discoveries and research in the field of X-ray spectroscopy"
90.	1923	Robert Andrews Millikan	"for his work on the elementary charge of electricity and on the photoelectric effect"
91.	1922	Niels Henrik David Bohr	"for his services in the investigation of the structure of atoms and of the radiation emanating from them"
92.	1921	Albert Einstein	"for his services to Theoretical Physics, and especially for his discovery of the law of the photoelectric effect"
93.	1920	Charles Edouard Guillaume	"in recognition of the service he has rendered to precision measurements in Physics by his discovery of anomalies in nickel steel alloys"
94.	1919	Johannes Stark	"for his discovery of the Doppler effect in canal rays and the splitting of spectral lines in electric fields"
95.	1918	Max Karl Ernst Ludwig Planck	"in recognition of the services he rendered to the advancement of Physics by his discovery of energy quanta"
96.	1917	Charles Glover Barkla	"for his discovery of the characteristic Röntgen radiation of the elements"
97.	1915	Sir William Henry Bragg and William Lawrence Bragg	"for their services in the analysis of crystal structure by means of X-rays"
98.	1914	Max von Laue	"for his discovery of the diffraction of X-rays by crystals"
99.	1913	Heike Kamerlingh Onnes	"for his investigations on the properties of matter at low temperatures which led, inter alia, to the production of liquid helium"
100.	1912	Nils Gustaf Dalén	"for his invention of automatic regulators for use in conjunction with gas accumulators for illuminating lighthouses and buoys"
101.	1911	Wilhelm Wien	"for his discoveries regarding the laws governing the radiation of heat"
102.	1910	Johannes Diderik van der Waals	"for his work on the equation of state for gases and liquids"
103.	1909	Guglielmo Marconi and Karl Ferdinand Braun	"in recognition of their contributions to the development of wireless telegraphy"
104.	1908	Gabriel Lippmann	"for his method of reproducing colours photographically based on the phenomenon of interference"
105.	1907	Albert Abraham Michelson	"for his optical precision instruments and the spectroscopic and metrological investigations carried out with their aid"
106.	1906	Joseph John Thomson	"in recognition of the great merits of his theoretical and experimental investigations on the conduction of electricity by gases"
107.	1905	Philipp Eduard Anton von Lenard	"for his work on cathode rays"
108.	1904	Lord Rayleigh (John William Strutt)	"for his investigations of the densities of the most important gases and for his discovery of argon in connection with these studies"



109.	1903	Antoine Henri Becquerel	"in recognition of the extraordinary services he has rendered by his discovery of spontaneous radioactivity"
		Pierre Curie and Marie Curie, née Sklodowska	"in recognition of the extraordinary services they have rendered by their joint researches on the radiation phenomena discovered by Professor Henri Becquerel"
110.	1902	Hendrik Antoon Lorentz and Pieter Zeeman	"in recognition of the extraordinary service they rendered by their researches into the influence of magnetism upon radiation phenomena"
111.	1901	Wilhelm Conrad Röntgen	"in recognition of the extraordinary services he has rendered by the discovery of the remarkable rays subsequently named after him"
<i>No Nobel Prize was awarded in 1916, 1931, 1934, 1940, 1941 and 1942.</i> In 1916, 1940-42 it is quite reasonable to assume that there was no awarding due to the world wars.			

[1]. [https://www.nobelprize.org/nobel\\_prizes/physics/laureates/](https://www.nobelprize.org/nobel_prizes/physics/laureates/)