Nobel Prize Winners in Physics

The following is the list of scientists who were awarded Nobel Prize in Physics by the Swedish Academy of Sciences. . John Bardeen is the only Nobel Laureate who has been awarded the Nobel Prize in Physics twice, in 1956 and 1972.

2019

"for contributions to our understanding of the evolution of the universe and Earth's place in the cosmos"

James Peebles "for theoretical discoveries in physical cosmology"

Michel Mayor and Didier Queloz "for the discovery of an exoplanet orbiting a solar-type star"

2018

"for groundbreaking inventions in the field of laser physics"

Arthur Ashkin "for the optical tweezers and their application to biological systems"

Gérard Mourou and Donna Strickland "for their method of generating high-intensity, ultra-short optical pulses"

2017

Rainer Weiss, Barry C. Barish and Kip S. Thorne "for decisive contributions to the LIGO detec tor and the observation of gravitational waves"

2016

David J. Thouless, F. Duncan M. Haldane and J. Michael Kosterlitz "for theoretical discoveries of topological phase transitions and topological phases of matter"

2015

Takaaki Kajita and Arthur B. McDonald "for the discovery of neutrino oscillations, which shows that neutrinos have mass"

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"

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 experi ments at CERN's Large Hadron Collider"

2012

Serge Haroche and David J. Wineland "for ground-breaking experimental methods that enable measuring and manipulation of individual quantum systems"

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"

2010

Andre Geim and Konstantin Novoselov "for groundbreaking experiments regarding the two-dimensional material graphene"

2009

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"

2008

Yoichiro Nambu "for the discovery of the mechanism of spontaneous broken symmetry in sub atomic physics"

Makoto Kobayashi and Toshihide Maskawa "for the discovery of the origin of the broken symme try which predicts the existence of at least three families of quarks in nature"

2007

Albert Fert and Peter Grünberg "for the discovery of Giant Magnetoresistance"

2006

John C. Mather and George F. Smoot "for their discovery of the blackbody form and anisotropy of the cosmic microwave background radiation"

2005

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"

2004

David J. Gross, H. David Politzer and Frank Wilczek "for the discovery of asymptotic freedom in the theory of the strong interaction"

2003

Alexei A. Abrikosov, Vitaly L. Ginzburg and Anthony J. Leggett "for pioneering contributions to the theory of superconductors and superfluids"

2002

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"

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 proper ties of the condensates"

2000

"for basic work on information and communication technology"

Zhores I. Alferov and Herbert Kroemer "for developing semiconductor heterostructures used in high-speed- and opto-electronics"

Jack S. Kilby "for his part in the invention of the integrated circuit"

1999

Gerardus 't Hooft and Martinus J.G. Veltman "for elucidating the quantum structure of electroweak interactions in physics"

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"

1997

Steven Chu, Claude Cohen-Tannoudji and William D. Phillips "for development of methods to cool and trap atoms with laser light"

1996

David M. Lee, Douglas D. Osheroff and Robert C. Richardson
"for their discovery of superfluidity in helium-3"

1995

"for pioneering experimental contributions to lepton physics"

Martin L. Perl "for the discovery of the tau lepton"

Frederick Reines "for the detection of the neutrino"

1994

"for pioneering contributions to the development of neutron scattering techniques for studies of condensed matter"

Bertram N. Brockhouse "for the development of neutron spectroscopy"

Clifford G. Shull "for the development of the neutron diffraction technique"

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"

1992

Georges Charpak "for his invention and development of particle detectors, in particular the multiwire proportional chamber"

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"

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"

1989

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"

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"

1987

J. Georg Bednorz and K. Alexander Müller "for their important break-through in the discovery of superconductivity in ceramic materials"

1986

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"

1985

Klaus von Klitzing "for the discovery of the quantized Hall effect"

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"

1983

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"

1982

Kenneth G. Wilson "for his theory for critical phenomena in connection with phase transitions"

1981

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"

1980

James Watson Cronin and Val Logsdon Fitch "for the discovery of violations of fundamental symmetry principles in the decay of neutral K-mesons"

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"

1978

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"

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"

1976

Burton Richter and Samuel Chao Chung Ting "for their pioneering work in the discovery of a heavy elementary particle of a new kind"

1975

Aage Niels Bohr, Ben Roy Mottelson and Leo James Rainwater "for the discovery of the connec tion 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"

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 tech nique, and Hewish for his decisive role in the discovery of pulsars"

1973

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"

1972

John Bardeen, Leon Neil Cooper and John Robert Schrieffer "for their jointly developed theory of superconductivity, usually called the BCS-theory"

1971

Dennis Gabor "for his invention and development of the holographic method"

1970

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"

1969

Murray Gell-Mann "for his contributions and discoveries concerning the classification of elemen tary particles and their interactions"

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"

1967

Hans Albrecht Bethe "for his contributions to the theory of nuclear reactions, especially his discov eries concerning the energy production in stars"

1966

Alfred Kastler "for the discovery and development of optical methods for studying Hertzian reso nances in atoms"

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"

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 prin ciple"

1963

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"

1962

Lev Davidovich Landau "for his pioneering theories for condensed matter, especially liquid helium"

1961

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"

1960

Donald Arthur Glaser "for the invention of the bubble chamber"

1959

Emilio Gino Segrè and Owen Chamberlain "for their discovery of the antiproton"

1958

Pavel Alekseyevich Cherenkov, Il´ja Mikhailovich Frank and Igor Yevgenyevich Tamm "for the discovery and the interpretation of the Cherenkov effect"

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"

1956

William Bradford Shockley, John Bardeen and Walter Houser Brattain "for their researches on semiconductors and their discovery of the transistor effect"

1955

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"

1954

Max Born "for his fundamental research in quantum mechanics, especially for his statistical inter pretation of the wavefunction"

Walther Bothe "for the coincidence method and his discoveries made therewith"

1953

Frits Zernike"for his demonstration of the phase contrast method, especially for his invention of the phase contrast microscope"

1952

Felix Bloch and Edward Mills Purcell "for their development of new methods for nuclear mag netic precision measurements and discoveries in connection therewith"

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"

1950

Cecil Frank Powell "for his development of the photographic method of studying nuclear processes and his discoveries regarding mesons made with this method"

1949

Hideki Yukawa "for his prediction of the existence of mesons on the basis of theoretical work on nuclear forces"

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"

1947

Sir Edward Victor Appleton "for his investigations of the physics of the upper atmosphere espe cially for the discovery of the so-called Appleton layer"

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"

1945

Wolfgang Pauli "for the discovery of the Exclusion Principle, also called the Pauli Principle"

1944

Isidor Isaac Rabi "for his resonance method for recording the magnetic properties of atomic nuclei"

1943

Otto Stern "for his contribution to the development of the molecular ray method and his discovery of the magnetic moment of the proton"

1942

No Nobel Prize was awarded this year.

1941

No Nobel Prize was awarded this year.

1940

No Nobel Prize was awarded this year.

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"

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"

1937

Clinton Joseph Davisson and George Paget Thomson "for their experimental discovery of the diffraction of electrons by crystals"

1936

Victor Franz Hess "for his discovery of cosmic radiation"

Carl David Anderson "for his discovery of the positron"

1935

James Chadwick"for the discovery of the neutron"

1934

No Nobel Prize was awarded this year.

1933

Erwin Schrödinger and Paul Adrien Maurice Dirac "for the discovery of new productive forms of atomic theory"

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"

1931

No Nobel Prize was awarded this year.

1930

Sir Chandrasekhara Venkata Raman"for his work on the scattering of light and for the discovery of the effect named after him"

1929

Prince Louis-Victor Pierre Raymond de Broglie "for his discovery of the wave nature of elec trons"

1928

Owen Willans Richardson "for his work on the thermionic phenomenon and especially for the discovery of the law named after him"

1927

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"

1926

J**ean Baptiste Perrin**"for his work on the discontinuous structure of matter, and especially for his discovery of sedimentation equilibrium"

1925

James Franck and Gustav Ludwig Hertz "for their discovery of the laws governing the impact of an electron upon an atom"

1924

Karl Manne Georg Siegbahn "for his discoveries and research in the field of X-ray spectroscopy"

1923

Robert Andrews Millikan "for his work on the elementary charge of electricity and on the photo electric effect"

1922

Niels Henrik David Bohr "for his services in the investigation of the structure of atoms and of the radiation emanating from them"

1921

Albert Einstein "for his services to Theoretical Physics, and especially for his discovery of the law of the photoelectric effect"

1920

Charles Edouard Guillaume "in recognition of the service he has rendered to precision measure ments in Physics by his discovery of anomalies in nickel steel alloys"

1919

Johannes Stark "for his discovery of the Doppler effect in canal rays and the splitting of spectral lines in electric fields"

1918

Max Karl Ernst Ludwig Planck "in recognition of the services he rendered to the advancement of Physics by his discovery of energy quanta"

1917

Charles Glover Barkla "for his discovery of the characteristic Röntgen radiation of the elements"

1916

No Nobel Prize was awarded this year.

1915

Sir William Henry Bragg and William Lawrence Bragg "for their services in the analysis of crystal structure by means of X-rays"

1914

Max von Laue "for his discovery of the diffraction of X-rays by crystals"

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"

1912

Nils Gustaf Dalén "for his invention of automatic regulators for use in conjunction with gas accu mulators for illuminating lighthouses and buoys"

1911

Wilhelm Wien "for his discoveries regarding the laws governing the radiation of heat"

1910

Johannes Diderik van der Waals "for his work on the equation of state for gases and liquids"

1909

Guglielmo Marconi and Karl Ferdinand Braun "in recognition of their contributions to the development of wireless telegraphy"

1908

Gabriel Lippmann "for his method of reproducing colours photographically based on the phenom enon of interference"

1907

Albert Abraham Michelson "for his optical precision instruments and the spectroscopic and metro logical investigations carried out with their aid"

1906

Joseph John Thomson "in recognition of the great merits of his theoretical and experimental inves tigations on the conduction of electricity by gases"

1905

Philipp Eduard Anton von Lenard "for his work on cathode rays"

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"

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"

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"

1901

Wilhelm Conrad Röntgen "in recognition of the extraordinary services he has rendered by the discovery of the remarkable rays subsequently named after him"