**Biography**

The Nobel Prize in Physics 1979

Born: 29 January 1926, Jhang Maghiāna, India (now Pakistan)

Died: 21 November 1996, Oxford, United Kingdom

Salam died in 1996. He was outlived by his two wives and children.

**Spouse:**[Louise Johnson](https://www.google.com/search?sca_esv=884448dcb0ad80d4&sxsrf=ACQVn08Frwvwktn306JyXULg1JQj5DDeAQ:1707480827650&q=Louise+Johnson&si=AKbGX_qWtsfHufXsq_1jeDkJp50FstNngDxsch3EVTUjn7imcFee4lHjC5vCMORxR-5o10mGvrBAS3lUDBxDjpecg8OhKQyX8bEy9gcopzCvZl7NPRDH3IIQI0Z0huT9Yka_T9bsOIhHh8fYZXrfrYlt93pqZSXyS7A9auQE-SEaNogiUnclmEjMxNgcg-7R3m9ablNCy38kDbmtzTUMcSe0Oipis6GPRuCG-oLyguKJ5LEuTLuk6HbrLEFVg1Q6pjhh1GRmg95QeON8HpCIl3PwemgvweX0aw%3D%3D&sa=X&ved=2ahUKEwigjMXhnZ6EAxWk0gIHHdIxArcQmxMoAHoECCMQAg) (m. 1968–1996), [Amtul Hafeez Begum](https://www.google.com/search?sca_esv=884448dcb0ad80d4&sxsrf=ACQVn08Frwvwktn306JyXULg1JQj5DDeAQ:1707480827650&q=Amtul+Hafeez+Begum&si=AKbGX_rO4P19IF_yO85wYpkEaz-W_oZWd5JUOOVnUVftf2aeoVFmA77a5nVXjqg_4aPb-cK4qF9Eb0XIo7ke52-3_Y7BBetZspU72W0qhnO0tOHuv58DXrYzYyzUn2M0dgw3O0PjoDDvlciEr1_6W0Z1hm8ksymhOQ09NME2sGSMwJMO1OdZ6R3dw4gbyvEsxTvzaFMPg8hY8SSLwAfeQ3EFnfZpS3_TtWDL4V1ZbhFfoiftFEhwNP0oExhIK3_0e4I1VIkLM4lfaRuUqyoidbR28bmykjUKUw%3D%3D&sa=X&ved=2ahUKEwigjMXhnZ6EAxWk0gIHHdIxArcQmxMoAXoECCMQAw) (m. 1949–1996)

**Children:**[Aziza Rahman](https://www.google.com/search?sca_esv=884448dcb0ad80d4&sxsrf=ACQVn08Frwvwktn306JyXULg1JQj5DDeAQ:1707480827650&q=Aziza+Rahman&si=AKbGX_rO4P19IF_yO85wYpkEaz-W_oZWd5JUOOVnUVftf2aeoYl_reQ0JT386Y63B_PeNgdQcMNgIQzwnCQtjnH3fZCn-WNlb_2c8wcJ63EL5VauKFhRRWDWZbmJTNQPad2-K-4YJLnBrh9ZkKCwINEpvd0S_FqnIgyPKDXBBzOOsDcBcGoH5yD1-yJS398yOlMWedkS697vAuyPbXqjT4ObgVyl7j1tCvbPXh8zphr7rNp7SAvqZcdOuc45mSwRsLIUY2QBVXA4Di2EqcgkQSuFY5ImJoaqVQ%3D%3D&sa=X&ved=2ahUKEwigjMXhnZ6EAxWk0gIHHdIxArcQmxMoAHoECB8QAg), [Anisa Bushra Salam Bajwa](https://www.google.com/search?sca_esv=884448dcb0ad80d4&sxsrf=ACQVn08Frwvwktn306JyXULg1JQj5DDeAQ:1707480827650&q=Anisa+Bushra+Salam+Bajwa&si=AKbGX_rO4P19IF_yO85wYpkEaz-W_oZWd5JUOOVnUVftf2aeoasIQh6T3kL04_IT4NUkHH9ddaDo-_9meQAGi09mr5BvrZPK4Tddw0yhQ41N5eocjO4pa9JbtsXtJH_Jwp9J32Hq5Gq6VLspbIbb9JkfsMY3_sTH_0CLFO1Rgn_XZooKImh_1xj_Vy952dDJ44VKyCmVZPa5MfMdSuotW4EsVeF4lOti53QXV3iaeu0pN0hlcfvrcg28XAFCXK8x8UOgN2Z13Ki9JGWR0ucQWpSiEsivmDdK1xGaEB0TTV_RtJMifan4m6Q%3D&sa=X&ved=2ahUKEwigjMXhnZ6EAxWk0gIHHdIxArcQmxMoAXoECB8QAw)

**Parents:**[Chaudhry Muhammad Hussain](https://www.google.com/search?sca_esv=884448dcb0ad80d4&sxsrf=ACQVn08Frwvwktn306JyXULg1JQj5DDeAQ:1707480827650&q=Chaudhry+Muhammad+Hussain&si=AKbGX_rO4P19IF_yO85wYpkEaz-W_oZWd5JUOOVnUVftf2aeoavM3m9pU8XmjsbuuhLlW-phYoYAvQWDXAqi_fEePn_6v8xHCBVpidZPvJYeakRyfHuU5kZ7ucp-pEJ9nJ35ZYg4rGpkSulDv93tcEEukmC6qC_Cf28j_ivDcglAuxvWa3pHx808G9j6zR-eQ9XNQeIDyz8NRgf9b-AmDvItIdb5IFknU_9boK1In0yX2_btX9d-EdpeeSaeEmnwv-_YuTPVjcYzeBUiEVYjw7RS4W4hMs9TY3rJ5UKqoM65dx9vVrZtNk8%3D&sa=X&ved=2ahUKEwigjMXhnZ6EAxWk0gIHHdIxArcQmxMoAHoECCEQAg), [Hajira Hussain](https://www.google.com/search?sca_esv=884448dcb0ad80d4&sxsrf=ACQVn08Frwvwktn306JyXULg1JQj5DDeAQ:1707480827650&q=Hajira+Hussain&si=AKbGX_rO4P19IF_yO85wYpkEaz-W_oZWd5JUOOVnUVftf2aeoZneItnf32bjXCgq99VoUrczpjKabN40iZFxPPJjL7ovXkonufwePPnL6Z-J3KNJm6PgCsmrp9tFWERYzDE1LXZZwr65wzg3QMl_M0SUbxVVY4-eKMFmf6SNzexXlUuMERlM2_uG20P6QBe6U77FiuifXdN5tq7QtKxthlLPWuvf7MEbBXa6rA_Mb-hLZ3dbkmHHHBNNOc4RXejSSIpYJ4UiLl1_xeztbDIUgMpXVvjia-yZ0g%3D%3D&sa=X&ved=2ahUKEwigjMXhnZ6EAxWk0gIHHdIxArcQmxMoAXoECCEQAw)

Abdus Salam was born in Jhang, a small town in what is now Pakistan, in 1926. His father was an official in the Department of Education in a poor farming district. His family has a long tradition of piety and learning.

**Education**

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| **Educational Career** |  |
| Government College, Jhang and Lahore (1938-1946) | M.A. (Punjab University) |
| Foundation Scholar, St. John’s College, Cambridge (1946- 1949) | B.A. Honours Double first in Mathematics (Wrangler) and Physics |
| Cavendish Laboratory, Cambridge (1952) | Ph.D. in Theoretical Physics |
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| Awarded Smith’s Prize by the University of Cambridge for “the most outstanding pre-doctoral contribution to Physics” (1950) | |

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| **D.Sc. Honoris Causa** |
| Punjab University, Lahore (1957) |
| University of Edinburgh (1971) |
| Punjab University, Lahore (Pakistan) (1957) |
| University of Edinburgh (UK) (1971) |
| University of Trieste (Italy) (1979) |
| University of Islamabad (Pakistan) (1979) |
| Universidad Nacional de Ingenieria, Lima (Peru) (1980) |
| University of San Marcos, Lima (Peru) (1980) |
| National University of San Antonio Abad, Cuzco (Peru) (1980) |
| Universidad Simon Bolivar, Caracas (Venezuela) (1980) |
| University of Wroclow (Poland) (1980) |
| Yarmouk University (Jordan) (1980) |
| University of Istanbul (Turkey) (1980) |
| Guru Nanak Dev University, Amritsar (India) (1981) |
| Muslim University, Aligarh (India) (1981) |
| Hindu University, Banaras (India) (1981) |
| University of Chittagong (Bangladesh) (1981) |
| University of Bristol (UK) (1981) |
| University of Maiduguri (Nigeria) (1981) |
| University of the Philippines, Quezon City (Philippines) (1982) |
| University of Khartoum (Sudan) (1983) |
| Universidad Complutense de Madrid (Spain) (1983) |
| City College, City University of New York (USA) (1984) |
| University of Nairobi (Kenya) (1984) |
| Universidad Nacional de Cuyo (Argentina) (1985) |
| Universidad Nacional de la Plata (Argentina) (1985) |
| University of Cambridge (UK) (1985) |
| University of Göteborg (Sweden) (1985) |
| Kliment Ohridski University of Sofia (Bulgaria) (1986) |
| University of Glasgow (UK) (1986) |
| University of Science and Technology, Hefei (China) (1986) |
| The City University, London (UK) (1986) |
| Panjab University, Chandigarh (India) (1987) |
| Medicina Alternativa, Colombo (Sri Lanka) (1987) |
| National University of Benin, Cotonou (Benin) (1987) |
| University of Exeter (UK) (1987) |
| University of Gent (Belgium) (1988) |
| “Creation” International Association of Scientists and Intelligentsia (USSR) (1989) |
| Bendel State University, Ekpoma (Nigeria) (1990) |
| University of Ghana (Ghana) (1990) |
| University of Warwick (UK) (1991) |
| University of Dakar (Senegal) (1991) |
| University of Tucuman (Argentina) (1991) |
| University of Lagos (Nigeria) (1992) |

### Academic career[[edit](https://en.wikipedia.org/w/index.php?title=Abdus_Salam&action=edit&section=3" \o "Edit section: Academic career)]

After receiving his doctorate in 1951, Salam returned to Lahore at the [Government College University](https://en.wikipedia.org/wiki/Government_College_University,_Lahore) as a Professor of Mathematics where he remained till 1954. In 1952, he was appointed professor and Chair of the Department of Mathematics at the neighbouring University of the Punjab. In the latter capacity, Salam sought to update the university curriculum, introducing a course in [Quantum mechanics](https://en.wikipedia.org/wiki/Quantum_mechanics) as a part of the undergraduate curriculum.[[38]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-38) However, this initiative was soon reverted by the Vice-Chancellor, and Salam decided to teach an evening course in Quantum Mechanics outside the regular curriculum.[[39]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-39) While Salam enjoyed a mixed popularity in the university, he began to supervise the education of students who were particularly influenced by him.[[40]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-40) As a result, Riazuddin remained the only student of Salam who had the privilege to study under Salam at the undergraduate and post-graduate level in Lahore, and [post-doctoral](https://en.wikipedia.org/wiki/Postdoctoral_research) level in Cambridge University. In 1953, Salam was unable to establish a research institute in Lahore, as he faced strong opposition from his peers.[[41]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-41) In 1954, Salam took fellowship and became one of the earliest [fellows of the Pakistan Academy of Sciences](https://en.wikipedia.org/wiki/Fellow_of_the_Pakistan_Academy_of_Sciences). As a result of [1953 Lahore riots](https://en.wikipedia.org/wiki/1953_Lahore_riots), Salam went back to Cambridge and joined [St John's College](https://en.wikipedia.org/wiki/St_John%27s_College,_Cambridge), and took a position as a professor of mathematics in 1954.[[42]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-42) In 1957, he was invited to take a chair at [Imperial College, London](https://en.wikipedia.org/wiki/Imperial_College,_London), and he and [Paul Matthews](https://en.wikipedia.org/wiki/Paul_Taunton_Matthews) went on to set up the Theoretical Physics Group at Imperial College.[[43]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-43) As time passed, this department became one of the prestigious research departments that included well known physicists such as [Steven Weinberg](https://en.wikipedia.org/wiki/Steven_Weinberg), [Tom Kibble](https://en.wikipedia.org/wiki/Tom_W._B._Kibble), [Gerald Guralnik](https://en.wikipedia.org/wiki/Gerald_Guralnik), [C. R. Hagen](https://en.wikipedia.org/wiki/C._R._Hagen), [Riazuddin](https://en.wikipedia.org/wiki/Riazuddin_(physicist)" \o "Riazuddin (physicist)), and [John Ward](https://en.wikipedia.org/wiki/John_Clive_Ward).

In 1957, Punjab University conferred Salam with an [Honorary doctorate](https://en.wikipedia.org/wiki/Honorary_degree) for his contribution in Particle physics.[[44]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-44) The same year with help from his mentor, Salam launched a scholarship programme for his students in Pakistan. Salam retained strong links with Pakistan, and visited his country from time to time.[[45]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-45) At Cambridge and Imperial College he formed a group of theoretical physicists, the majority of whom were his Pakistani students. At age 33, Salam became one of the youngest persons to be elected a [Fellow of the Royal Society (FRS) in 1959](https://en.wikipedia.org/wiki/List_of_Fellows_of_the_Royal_Society_elected_in_1959).[[7]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-kibble98-7) Salam took a fellowship at the [Princeton University](https://en.wikipedia.org/wiki/Princeton_University) in 1959, where he met with [J. Robert Oppenheimer](https://en.wikipedia.org/wiki/J._Robert_Oppenheimer)[[46]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-46) and to whom he presented his research work on neutrinos.[[47]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-47) Oppenheimer and Salam discussed the foundation of electrodynamics, problems and their solution.[[48]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-48) His dedicated personal assistant was Jean Bouckley. In 1980, Salam became a foreign fellow of the [Bangladesh Academy of Sciences](https://en.wikipedia.org/wiki/Bangladesh_Academy_of_Sciences).[[49]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-49)

Salam attended the Government College at [Lahore](https://www.britannica.com/place/Lahore), and in 1952 he received his Ph.D. in theoretical [physics](https://www.britannica.com/science/physics-science) from the [University of Cambridge](https://www.britannica.com/topic/University-of-Cambridge). He returned to [Pakistan](https://www.britannica.com/place/Pakistan) as a professor of mathematics in 1951–54 and then went back to Cambridge as a lecturer in mathematics. He became professor of theoretical physics at the Imperial College of Science and Technology, London, in 1957. Salam was the first Pakistani and the first Muslim scientist to win a Nobel Prize. In 1964 he helped found the International Centre for Theoretical Physics at [Trieste](https://www.britannica.com/place/Trieste-Italy), Italy, in order to provide support for physicists from [Third World](https://www.britannica.com/money/topic/Third-World) countries. He served as the centre’s director until his death.

When he cycled home from Lahore, at the age of 14, after gaining the highest marks ever recorded for the Matriculation Examination at the University of the Punjab, the whole town turned out to welcome him. He won a scholarship to Government College, University of the Punjab, and took his MA in 1946. In the same year he was awarded a scholarship to St. John’s College, Cambridge, where he took a BA (honours) with a double First in mathematics and physics in 1949. In 1950 he received the Smith’s Prize from Cambridge University for the most outstanding pre-doctoral contribution to physics. He also obtained a PhD in theoretical physics at Cambridge; his thesis, published in 1951, contained fundamental work in quantum electrodynamics which had already gained him an international reputation.

In 1954 Salam left his native country for a lectureship at Cambridge, and since then has visited Pakistan as adviser on science policy. His work for Pakistan has, however, been far-reaching and influential. He was a member of the Pakistan Atomic Energy Commission, a member of the Scientific Commission of Pakistan and was Chief Scientific Adviser to the President from 1961 to 1974.

Since 1957 he has been Professor of Theoretical Physics at Imperial College, London, and since 1964 has combined this position with that of Director of the ICTP, Trieste.

Affiliation at the time of the award: International Centre for Theoretical Physics, Trieste, Italy; Imperial College, London, United Kingdom

**Research Work**

According to modern physics, four fundamental forces exist in nature. Electromagnetic interaction is one of these. The weak interaction—responsible, for example, for the beta decay of nuclei—is another. Thanks to contributions made by Abdus Salam, Sheldon Glashow,and Steven Weinberg in 1968, these two interactions were unified to one single, called electroweak. The theory predicted, for example, that weak interaction manifests itself in “neutral weak currents” when certain elementary particles interact. This was later confirmed.

Salam's primary focus was research on the physics of elementary particles. His particular numerous groundbreaking contributions included:

* two-component [neutrino](https://en.wikipedia.org/wiki/Neutrino) theory and the prediction of the inevitable parity violation in [weak interaction](https://en.wikipedia.org/wiki/Weak_interaction);
* gauge [unification](https://en.wikipedia.org/wiki/Unified_field_theory) of weak and electromagnetic interactions, the unified force is called the "[Electroweak](https://en.wikipedia.org/wiki/Electroweak_interaction)" force, a name given to it by Salam, and which forms the basis of the [Standard Model](https://en.wikipedia.org/wiki/Standard_Model) in particle physics;
* predicted the existence of weak [neutral currents](https://en.wikipedia.org/wiki/Neutral_currents), and [W and Z bosons](https://en.wikipedia.org/wiki/W_and_Z_bosons), before their experimental discovery
* symmetry properties of elementary particles; [unitary symmetry](https://en.wikipedia.org/wiki/Unitary_symmetry);
* renormalization of meson theories;
* gravity theory and its role in particle physics; two tensor theory of gravity and strong interaction physics;
* unification of electroweak with strong nuclear forces, [grand unification theory](https://en.wikipedia.org/wiki/Grand_unification_theory);
* related prediction of proton-decay;
* [Pati–Salam model](https://en.wikipedia.org/wiki/Pati%E2%80%93Salam_model), a grand unification theory;
* [Supersymmetry](https://en.wikipedia.org/wiki/Supersymmetry) theory, in particular formulation of [Superspace](https://en.wikipedia.org/wiki/Superspace" \o "Superspace) and formalism of [superfields](https://en.wikipedia.org/wiki/Superfield" \o "Superfield) in 1974;
* the theory of [supermanifolds](https://en.wikipedia.org/wiki/Supermanifold" \o "Supermanifold), as a geometrical framework for understanding supersymmetry, in 1974;[[154]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-154)
* [Supergeometry](https://en.wikipedia.org/wiki/Superalgebra), the geometric basis for supersymmetry, in 1974;[[155]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-155)
* application of the [Higgs mechanism](https://en.wikipedia.org/wiki/Higgs_mechanism) to 'electroweak symmetry breaking';
* prediction of the [magnetic photon](https://en.wikipedia.org/wiki/Magnetic_photon) in 1966;[[57]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-A._Salam_1966_683%E2%80%93684-57)

**Awards and honors**

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| **Awards** |
| Hopkins Prize (Cambridge University) for “the most outstanding contribution to Physics during 1957-1958” |
| Adams Prize (Cambridge University) (1958) |
| First recipient of Maxwell Medal and Award (Physical Society, London) (1961) |
| Hughes Medal (Royal Society, London) (1964) |
| Atoms for Peace Medal and Award (Atoms for Peace Foundation) (1968) |
| J. Robert Oppenheimer Memorial Medal and Prize (University of Miami) (1971) |
| Guthrie Medal and Prize (1976) |
| Matteuci Medal (Accademia Nazionale dei Lincei, Rome) (1978) |
| John Torrence Tate Medal (American Institute of Physics) (1978) |
| Royal Medal (Royal Society, London) (1978) |
| Einstein Medal (UNESCO, Paris) (1979) |
| Shri R.D. Birla Award (India Physics Association) (1979) |
| Josef Stefan Medal (Josef Stefan Institute, Ljubljana) (1980) |
| Gold Medal for Outstanding Contributions to Physics (Czechoslovak Academy of Sciences, Prague) (1981) |
| Lomonosov Gold Medal (USSR Academy of Sciences) (1983) |
| Copley Medal (Royal Society, London) (1990) |

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| **Appointments** |
| Professor, Government College and Punjab University, Lahore (1951- 1954) |
| Elected Fellow St. John’s College, Cambridge (1951-1956) |
| Member, Institute of Advanced Study, Princeton (1951) |
| Lecturer, Cambridge University (1954-1956) |
| Professor of Theoretical Physics, London University, Imperial College, London, since 1957 |
| Director, International Centre for Theoretical Physics, Trieste, since 1964 |
| Elected (First) Fellow of the Royal Society, London, from Pakistan (1959) |
| Elected, Foreign Member of the Royal Swedish Academy of Sciences (1970) |
| Elected, Foreign Member of the American Academy of Arts and Sciences (1971) |
| Elected, Foreign Member, USSR Academy of Sciences (1971) |
| Elected, Honorary Fellow St. John’s College, Cambridge (1971) |
| Elected, Foreign Associate, USA National Academy of Sciences (Washington) (1979) |
| Elected, Foreign Member, Accademia Nazionale dei Lincei (Rome) (1979) |
| Elected, Foreign Member, Accademia Tiberina (Rome) (1979) |
| Elected, Foreign Member, Iraqi Academy (Baghdad) (1979) |
| Elected, Honorary Fellow, Tata Institute of Fundamental Research (Bombay) (1979) |
| Elected, Honorary Member, Korean Physics Society (Seoul) (1979) |
| Elected, Foreign Member, Academy of the Kingdom of Morocco (Rabat) (1980) |
| Elected, Foreign Member, Accademia Nazionale delle Scienze dei XL (Rome) (1980) |
| Elected, Member, European Academy of Science, Arts and Humanities (Paris) (1980) |
| Elected, Associate Member, Josef Stefan Institute (Ljubljana) (1980) |
| Elected, Foreign Fellow, Indian National Science Academy (New Delhi) (1980) |
| Elected, Fellow, Bangladesh Academy of Sciences (Dhaka) (1980) |
| Elected, Member, Pontifical Academy of Sciences (Vatican City) (1981) |
| Elected, Corresponding Member, Portuguese Academy of Sciences (Lisbon) (1981) |
| Founding Member, Third World Academy of Sciences (1983) |
| Elected, Corresponding Member, Yugoslav Academy of Sciences and Arts (Zagreb) (1983) |
| Elected, Honorary Fellow, Ghana Academy of Arts and Sciences (1984) |
| Elected, Honorary Member, Polish Academy of Sciences (1985) |
| Elected, Corresponding Member, Academia de Ciencias Medicas, Fisicas y Naturales de Guatemala (1986) |
| Elected, Fellow, Pakistan Academy of Medical Sciences (1987) |
| Elected, Honorary Fellow, Indian Academy of Sciences (Bangalore) (1988) |
| Elected, Distinguished International Fellow of Sigma Xi (1988) |
| Elected, Honorary Member, Brazilian Mathematical Society (1989) |
| Elected, Honorary Member, National Academy of Exact, Physical and Natural Sciences, Argentina (1989) |
| Elected, Honorary Member, Hungarian Academy of Sciences (1990) |
| Elected, Member, Academia Europaea (1990) |
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| **Orders and other Distinctions** |
| Order of Andres Bello (Venezuela) (1980) |
| Order of Istiqlal (Jordan) (1980) |
| Cavaliere di Gran Croce dell’Ordine al Merito della Repubblica Italiana (1980) |
| Honorary Knight Commander of the Order of the British Empire (1989) |

Salam attended the Government College at [Lahore](https://www.britannica.com/place/Lahore), and in 1952 he received his Ph.D. in theoretical [physics](https://www.britannica.com/science/physics-science) from the [University of Cambridge](https://www.britannica.com/topic/University-of-Cambridge). He returned to [Pakistan](https://www.britannica.com/place/Pakistan) as a professor of mathematics in 1951–54 and then went back to Cambridge as a lecturer in mathematics. He became professor of theoretical physics at the Imperial College of Science and Technology, London, in 1957. Salam was the first Pakistani and the first Muslim scientist to win a Nobel Prize. In 1964 he helped found the International Centre for Theoretical Physics at [Trieste](https://www.britannica.com/place/Trieste-Italy), Italy, in order to provide support for physicists from [Third World](https://www.britannica.com/money/topic/Third-World) countries. He served as the centre’s director until his death.

**Selected Works**

Early in his career, Salam made an important and significant contribution in [quantum electrodynamics](https://en.wikipedia.org/wiki/Quantum_electrodynamics) and [quantum field theory](https://en.wikipedia.org/wiki/Quantum_field_theory), including its extension into [particle](https://en.wikipedia.org/wiki/Particle_physics) and [nuclear physics](https://en.wikipedia.org/wiki/Nuclear_physics). In his early career in Pakistan, Salam was greatly interested in mathematical series and their relation to physics. Salam had played an influential role in the advancement of nuclear physics, but he maintained and dedicated himself to mathematics and theoretical physics and focused Pakistan to do more research in theoretical physics.[[30]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Munir_Ahmad_Khan,_Former_Chairman_of_the_Pakistan_Atomic_Energy_Commission,_former_Head_of_the_Nuclear_Engineering_Division,_and_former_Head_of_the_Reactor_Engineering_IAEA_Division-30) However, he regarded nuclear physics (nuclear fission and nuclear power) as a non-pioneering part of physics as it had already "happened".[[30]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Munir_Ahmad_Khan,_Former_Chairman_of_the_Pakistan_Atomic_Energy_Commission,_former_Head_of_the_Nuclear_Engineering_Division,_and_former_Head_of_the_Reactor_Engineering_IAEA_Division-30) Even in Pakistan, Salam was the leading driving force in theoretical physics, with many scientists he continued to influence and encourage to keep their work on theoretical physics.[[30]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Munir_Ahmad_Khan,_Former_Chairman_of_the_Pakistan_Atomic_Energy_Commission,_former_Head_of_the_Nuclear_Engineering_Division,_and_former_Head_of_the_Reactor_Engineering_IAEA_Division-30)

Salam had a prolific research career in theoretical and high-energy physics.[[50]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Riazuddin_2005_31-50) Salam had worked on theory of the [neutrino](https://en.wikipedia.org/wiki/Neutrino) – an elusive particle that was first postulated by [Wolfgang Pauli](https://en.wikipedia.org/wiki/Wolfgang_Pauli) in the 1930s. Salam introduced [chiral symmetry](https://en.wikipedia.org/wiki/Chiral_symmetry) in the theory of neutrinos. The introduction of chiral symmetry played crucial role in subsequent development of the [theory of electroweak interactions](https://en.wikipedia.org/wiki/Electroweak_interaction).[[51]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-51) Salam later passed his work to [Riazuddin](https://en.wikipedia.org/wiki/Riazuddin_(physicist)" \o "Riazuddin (physicist)), who made pioneering contributions in neutrinos. Salam introduced the massive [Higgs bosons](https://en.wikipedia.org/wiki/Higgs_boson) to the theory of the [Standard Model](https://en.wikipedia.org/wiki/Standard_Model), where he later predicted the existence of [proton decay](https://en.wikipedia.org/wiki/Proton_decay). In 1963, Salam published his theoretical work on the [vector meson](https://en.wikipedia.org/wiki/Vector_meson). The paper introduced the interaction of vector meson, photon (vector [electrodynamics](https://en.wikipedia.org/wiki/Electrodynamics)), and the [renormalisation](https://en.wikipedia.org/wiki/Renormalisation" \o "Renormalisation) of vector mesons' known mass after the interaction.[[52]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-52) In 1961, Salam began to work with [John Clive Ward](https://en.wikipedia.org/wiki/John_Clive_Ward) on [symmetries](https://en.wikipedia.org/wiki/Symmetry_(physics)) and [electroweak unification](https://en.wikipedia.org/wiki/Electroweak_unification).[[53]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-53)[[54]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-54) In 1964, Salam and Ward worked on a [Gauge theory](https://en.wikipedia.org/wiki/Gauge_theory) for the [weak](https://en.wikipedia.org/wiki/Weak_interaction) and [electromagnetic interaction](https://en.wikipedia.org/wiki/Electromagnetic_interaction), subsequently obtaining [SU(2)](https://en.wikipedia.org/wiki/Special_unitary_group) × [U(1)](https://en.wikipedia.org/wiki/Circle_group) model. Salam was convinced that all the [elementary particle](https://en.wikipedia.org/wiki/Fundamental_interaction) interactions are actually the gauge interactions.[[55]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-uddin_1994_149%E2%80%93157-55) In 1968, together with [Weinberg](https://en.wikipedia.org/wiki/Steven_Weinberg) and [Sheldon Glashow](https://en.wikipedia.org/wiki/Sheldon_Glashow), Salam formulated the mathematical concept of their work. While in Imperial College, Salam, along with Glashow and [Jeffrey Goldstone](https://en.wikipedia.org/wiki/Jeffrey_Goldstone), mathematically proved the [Goldstone's theorem](https://en.wikipedia.org/wiki/Goldstone_boson), that a massless [spin-zero](https://en.wikipedia.org/wiki/Spin_(physics)) object must appear in a theory as a result of spontaneous breaking of a continuous [global symmetry](https://en.wikipedia.org/wiki/Global_symmetry).[[55]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-uddin_1994_149%E2%80%93157-55) In 1967-8, Salam and Weinberg incorporated the [Higgs mechanism](https://en.wikipedia.org/wiki/Higgs_mechanism) into Glashow's discovery, giving it a modern form in electroweak theory, and thus theorised half of the Standard Model.[[56]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-56) In 1968, together with [Weinberg](https://en.wikipedia.org/wiki/Steven_Weinberg) and [Sheldon Glashow](https://en.wikipedia.org/wiki/Sheldon_Glashow), Salam finally formulated the mathematical concept of their work.

Abdus Salam lectures on G.U.T. at the [University of Chicago](https://en.wikipedia.org/wiki/University_of_Chicago)'s [Oriental Institute](https://en.wikipedia.org/wiki/Oriental_Institute_of_Chicago)

In 1966, Salam carried out pioneering work on a [hypothetical particle](https://en.wikipedia.org/wiki/Hypothetical_particle). Salam showed the possible [electromagnetic](https://en.wikipedia.org/wiki/Electromagnetism) interaction between the [Magnetic monopole](https://en.wikipedia.org/wiki/Magnetic_monopole) and the [C-violation](https://en.wikipedia.org/wiki/CP-violation), thus he formulated the [magnetic photon](https://en.wikipedia.org/wiki/Magnetic_photon).[[57]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-A._Salam_1966_683%E2%80%93684-57)

Following the publication of [PRL Symmetry Breaking](https://en.wikipedia.org/wiki/1964_PRL_symmetry_breaking_papers) papers in 1964, Steven Weinberg and Salam were the first to apply the Higgs mechanism to [electroweak symmetry breaking](https://en.wikipedia.org/wiki/Electroweak_symmetry_breaking). Salam provided a mathematical postulation for the interaction between the Higgs boson and the electroweak symmetry theory.[[58]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-58)

In 1972, Salam began to work with [Indian-American](https://en.wikipedia.org/wiki/Indian-American) theoretical physicist [Jogesh Pati](https://en.wikipedia.org/wiki/Jogesh_Pati" \o "Jogesh Pati). Pati wrote to Salam several times expressing interest to work under Salam's direction, in response to which Salam eventually invited Pati to the ICTP seminar in Pakistan. Salam suggested to Pati that there should be some deep reason why the protons and electrons are so different and yet carry equal but opposite electric charge. Protons are composed of quarks, but the electroweak theory was concerned only with the electrons and neutrinos, with nothing postulated about quarks. If all of nature's ingredients could be brought together in one new symmetry, it might reveal a reason for the various features of these particles and the forces they feel. This led to the development of [Pati–Salam model](https://en.wikipedia.org/wiki/Pati%E2%80%93Salam_model" \o "Pati–Salam model) in particle physics.[[59]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-59) In 1973, Salam and Jogesh Pati were the first to notice that since [Quarks](https://en.wikipedia.org/wiki/Quark) and [Leptons](https://en.wikipedia.org/wiki/Lepton) have very similar [SU(2)](https://en.wikipedia.org/wiki/Special_unitary_group) × [U(1)](https://en.wikipedia.org/wiki/Circle_group) representation content, they all may have similar entities.[[60]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-60) They provided a simple realisation of the quark-lepton symmetry by postulating that [lepton number](https://en.wikipedia.org/wiki/Lepton_number) was a fourth quark [colour](https://en.wikipedia.org/wiki/Color_charge" \o "Color charge), dubbed "violet".[[61]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-61)

Physicists had believed that there were four fundamental forces of nature: the gravitational force, the strong and weak nuclear forces, and the electromagnetic force. Salam had worked on the unification of these forces from 1959 with Glashow and Weinberg. While at Imperial College London, Salam successfully showed that weak nuclear forces are not really different from electromagnetic forces, and two could inter-convert. Salam provided a theory that shows the unification of two fundamental forces of nature, weak nuclear forces and the electromagnetic forces, one into another.[[50]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Riazuddin_2005_31-50) Glashow had also formulated the same work, and the theory was combined in 1966. In 1967, Salam proved the electroweak unification theory mathematically, and finally published the papers. For this achievement, Salam, Glashow, and Weinberg were awarded the Nobel Prize in Physics in 1979. The Nobel Prize Foundation paid tribute to the scientists and issued a statement saying: "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".[[8]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Nobel_Prize-8) Salam took the Nobel Prize medal to the house of his former professor, Anilendra Ganguly, who taught him at the [Sanatan Dharma College](https://en.wikipedia.org/wiki/Sanatan_Dharma_College" \o "Sanatan Dharma College) in Lahore, and placed the medal around his neck, stating "Mr Anilendra Ganguly this medal is a result of your teaching and love of mathematics that you instilled in me".[[62]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Wangchuk2019-62) In the 1970s Salam continued trying to unify forces by including the strong interaction in a [grand unified theory](https://en.wikipedia.org/wiki/Grand_unified_theory).

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| --- |
| **Awards for contributions towards peace and promotion of international scientific collaboration** |
| Atoms for Peace Medal and Award (Atoms for Peace Foundation) (1968) |
| Peace Medal (Charles University, Prague) (1981) |
| Premio Umberto Biancomano (Italy) (1986) |
| Dayemi International Peace Award (Bangladesh) (1986) |
| First Edinburgh Medal and Prize (Scotland) (1988) |
| “Genoa” International Development of Peoples Prize (Italy) (1988) |
| Catalunya International Prize (Spain) (1990) |
|  |
| **United Nations Assignments** |
| Scientific Secretary, Geneva Conferences on Peaceful Uses of Atomic Energy (1955 and 1958) |
| Member, United Nations Advisory Committee on Science and Technology (1964-1975) |
| Member, United Nations Panel and Foundation Committee for the United Nations University (1970-1973) |
| Chairman, United Nations Advisory Committee on Science and Technology (1971-1972) |
| Member, Scientific Council, SIPRI, Stockholm International Peace Research Institute (1970) |
| Vice President, International Union of Pure and Applied Physics (1972-1978) |
|  |
| **Pakistan Assignments** |
| Member, Atomic Energy Commission, Pakistan (1958-1974) |
| Adviser, Education Commission, Pakistan (1959) |
| Member, Scientific Commission, Pakistan (1959) |
| Chief Scientific Adviser, President of Pakistan (1961-1974) |
| President, Pakistan Association for Advancement of Science (1961-1962) |
| Chairman, Pakistan Space and Upper Atmosphere Committee (1961-1964) |
| Governor from Pakistan to the International Atomic Energy Agency(1962-1963) |
| Member, National Science Council, Pakistan (1963-1975) |
| Member, Board of Pakistan Science Foundation (1973-1977) |
|  |
| **Pakistani Awards** |
| Sitara-i-Pakistan (S.Pk.) |
| Pride of Performance Medal and Award (1959) |

**Complete personal details**

## **Personal life[[edit](https://en.wikipedia.org/w/index.php?title=Abdus_Salam&action=edit&section=9" \o "Edit section: Personal life)]**

Abdus Salam was a very private individual, who kept his public and personal lives quite separate.[[7]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-kibble98-7) He married twice; first time to a cousin, the second time as well in accordance with [Islamic law](https://en.wikipedia.org/wiki/Nikah).[[106]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-nyt-obit-106)[[107]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-johnson-guardian-obit-107) At his death, he was survived by three daughters and a son by his first wife, and a son and daughter by his second, Professor [Dame Louise Johnson](https://en.wikipedia.org/wiki/Louise_Johnson), formerly Professor of [molecular biophysics](https://en.wikipedia.org/wiki/Molecular_biophysics) at [Oxford University](https://en.wikipedia.org/wiki/Oxford_University). Two of his daughters are Anisa Bushra Salam Bajwa and Aziza Rahman.[*[citation needed](https://en.wikipedia.org/wiki/Wikipedia:Citation_needed" \o "Wikipedia:Citation needed)*]

### Religion[[edit](https://en.wikipedia.org/w/index.php?title=Abdus_Salam&action=edit&section=10" \o "Edit section: Religion)]

Salam was an [Ahmadi](https://en.wikipedia.org/wiki/Ahmadi),[[37]](https://en.wikipedia.org/wiki/Abdus_Salam" \l "cite_note-NobelBio-37) who saw his religion as a fundamental part of his scientific work. He once wrote that "the Holy Quran enjoins us to reflect on the verities of Allah's created laws of nature; however, that our generation has been privileged to glimpse a part of His design is a bounty and a grace for which I render thanks with a humble heart."[[37]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-NobelBio-37) [[*check quotation syntax*](https://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style#Punctuation)] During his acceptance speech for the Nobel Prize in Physics, Salam quoted verses from the [Quran](https://en.wikipedia.org/wiki/Quran) and stated:

"Thou seest not, in the creation of the All-merciful any imperfection, Return thy gaze, seest thou any fissure? Then Return thy gaze, again and again. Thy gaze, Comes back to thee dazzled, aweary." ([67:3–4](https://en.wikipedia.org/wiki/Q67:3%E2%80%934)) This, in effect, is the faith of all physicists; the deeper we seek, the more is our wonder excited, the more is the dazzlement for our gaze.[[108]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-The_Nobel_Prize_in_Physics_1979_-_Banquet_Speech-108)

In 1974, the Pakistan parliament made the [Second Amendment to the Constitution of Pakistan](https://en.wikipedia.org/wiki/Second_Amendment_to_the_Constitution_of_Pakistan) that declared Ahmadis to be [non-Muslim](https://en.wiktionary.org/wiki/non-Muslim). In protest, Salam left Pakistan for London. After his departure, he did not completely cut his ties to Pakistan, and kept a close association with the Theoretical Physics Group as well as academic scientists from the Pakistan Atomic Energy Commission.[[101]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Riazuddin_2005_34-101)

### Death[[edit](https://en.wikipedia.org/w/index.php?title=Abdus_Salam&action=edit&section=11" \o "Edit section: Death)]

[](https://en.wikipedia.org/wiki/File:Grave_of_Abdus_Salam.jpg)The grave of Abdus Salam at [Rabwah](https://en.wikipedia.org/wiki/Rabwah" \o "Rabwah), Pakistan with the word 'Muslim' obscured.

Abdus Salam died on 21 November 1996 at the age of 70 in [Oxford](https://en.wikipedia.org/wiki/Oxford), England, from [progressive supranuclear palsy](https://en.wikipedia.org/wiki/Progressive_supranuclear_palsy).[[109]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-109) His body was returned to Pakistan and kept in Darul Ziafat, where some 13,000 men and women visited to pay their last respects. Approximately 30,000 people attended his funeral prayers.[[110]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-110)

Salam was buried in [Bahishti Maqbara](https://en.wikipedia.org/wiki/Bahishti_Maqbara" \o "Bahishti Maqbara), a cemetery established by the [Ahmadiyya Community](https://en.wikipedia.org/wiki/Ahmadiyya_Community" \o "Ahmadiyya Community) at [Rabwah](https://en.wikipedia.org/wiki/Rabwah" \o "Rabwah), Punjab, Pakistan, next to his parents' graves. The epitaph on his tomb initially read "First Muslim Nobel Laureate". The Pakistani government removed "Muslim" and left only his name on the headstone. They are the only nation to officially declare that Ahmadis are non-Muslim.[[111]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-AHRC-111) The word "Muslim" was initially obscured on the orders of a local magistrate before moving to the national level.[[112]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-112) Under [Ordinance XX](https://en.wikipedia.org/wiki/Ordinance_XX) of 1984,[[113]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-113)[[114]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-114) being an Ahmadi, he was considered a non-Muslim according to the definition provided in the [Second Amendment to the Constitution of Pakistan](https://en.wikipedia.org/wiki/Second_Amendment_to_the_Constitution_of_Pakistan).[[115]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-115)

To accommodate the astonishing volume of activity that he undertakes, Professor Salam cuts out such inessentials as holidays, parties and entertainments. Faced with such an example, the staff of the Centre find it very difficult to complain that they are overworked.

He has a way of keeping his administrative staff at the ICTP fully alive to the real aim of the Centre – the fostering through training and research of the advancement of theoretical physics, with special regard to the needs of developing countries. Inspired by their personal regard for him and encouraged by the fact that he works harder than any of them, the staff cheerfully submit to working conditions that would be unthinkable here at the ([International Atomic Energy Agency in Vienna (IAEA)](https://www.nobelprize.org/nobel_prizes/peace/laureates/2005/index.html). The money he received from the Atoms for Peace Medal and Award he spent on setting up a fund for young Pakistani physicists to visit the ICTP. He uses his share of the Nobel Prize entirely for the benefit of physicists from developing countries and does not spend a penny of it on himself or his family.

Abdus Salam is known to be a devout Muslim, whose religion does not occupy a separate compartment of his life; it is inseparable from his work and family life. He once wrote: “The Holy Quran enjoins us to reflect on the verities of Allah’s created laws of nature; however, that our generation has been privileged to glimpse a part of His design is a bounty and a grace for which I render thanks with a humble heart.”

**struggle of the person**

at the age of 14, after gaining the highest marks ever recorded for the Matriculation Examination at the University of the Punjab, the whole town turned out to welcome him. He won a scholarship to Government College, University of the Punjab, and took his MA in 1946. In the same year he was awarded a scholarship to St. John’s College, Cambridge, where he took a BA (honours) with a double First in mathematics and physics in 1949. In 1950 he received the Smith’s Prize from Cambridge University for the most outstanding pre-doctoral contribution to physics. He also obtained a PhD in theoretical physics at Cambridge;

Salam returned to Pakistan in 1951 to teach mathematics at Government College, Lahore, and in 1952 became head of the Mathematics Department of the Punjab University. He had come back with the intention of founding a school of research, but it soon became clear that this was impossible. To pursue a career of research in theoretical physics he had no alternative at that time but to leave his own country and work abroad. Many years later he succeeded in finding a way to solve the heartbreaking dilemma faced by many young and gifted theoretical physicists from developing countries. At the ICTP, Trieste, which he created, he instituted the famous “Associateships” which allowed deserving young physicists to spend their vacations there in an invigorating atmosphere, in close touch with their peers in research and with the leaders in their own field, losing their sense of isolation and returning to their own country for nine months of the academic year refreshed and recharged.

For more than forty years he has been a prolific researcher in theoretical elementary particle physics. He has either pioneered or been associated with all the important developments in this field, maintaining a constant and fertile flow of brilliant ideas. For the past thirty years he has used his academic reputation to add weight to his active and influential participation in international scientific affairs. He has served on a number of United Nations committees concerned with the advancement of science and technology in developing countries.

**complete details about the achievements**

## **Honours[[edit](https://en.wikipedia.org/w/index.php?title=Abdus_Salam&action=edit&section=14" \o "Edit section: Honours)]**

Dr. Salam's genius was like a magic... And there was always an element of eastern mysticism in his ideas that left one wondering how to fathom his genius...

— *[Masud Ahmad](https://en.wikipedia.org/wiki/Masud_Ahmad" \o "Masud Ahmad)*, honoring Abdus Salam, [[14]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Dawn_News_International,_Archive_2004-14)

Salam was elected to the [American Academy of Arts and Sciences](https://en.wikipedia.org/wiki/American_Academy_of_Arts_and_Sciences) in 1971, the United States [National Academy of Sciences](https://en.wikipedia.org/wiki/National_Academy_of_Sciences) in 1979, and the [American Philosophical Society](https://en.wikipedia.org/wiki/American_Philosophical_Society) in 1992.[[128]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-128)[[129]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-129)[[130]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-130) In 1997, scientists at ICTP renamed the institute as the [Abdus Salam International Centre for Theoretical Physics](https://en.wikipedia.org/wiki/Abdus_Salam_International_Centre_for_Theoretical_Physics" \o "Abdus Salam International Centre for Theoretical Physics) in the honour of Salam.[[131]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-131) Salam's services have been recognised in Pakistan, as his students have openly spoken and stressed the importance of Science and Technology in Pakistan. In 1999, per the recommendation of Ishfaq Ahmad, the Government of Pakistan led the establishment of the [Abdus Salam Chair in Physics](https://en.wikipedia.org/wiki/Abdus_Salam_Chair_in_Physics" \o "Abdus Salam Chair in Physics) at the [Government College University](https://en.wikipedia.org/wiki/Government_College_University_(Lahore)).[[132]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Salam_Chair_in_Physics-132) On 22 November 2009, the Director of the Abdus Salam International Centre for Theoretical Physics gifted the original Nobel Prize Certificate to his alma mater.[[133]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-133) In 2011, GCU's Salam Chair in Physics held a one-day-long conference that was attributed to Abdus Salam.[[132]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Salam_Chair_in_Physics-132) Salam's students [Ghulam Murtaza](https://en.wikipedia.org/wiki/Ghulam_Murtaza_(physicist)), [Pervez Hoodbhoy](https://en.wikipedia.org/wiki/Pervez_Hoodbhoy), [Riazuddin](https://en.wikipedia.org/wiki/Riazuddin_(physicist)" \o "Riazuddin (physicist)) and Tariq Zaidi discussed the life and works of Salam, and brought to light his achievements in Pakistan and Physics.[[132]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Salam_Chair_in_Physics-132) While covering the media converge on Salam's tribute, the [*News International*](https://en.wikipedia.org/wiki/The_News_International), referred to Salam as the "great Pakistan scientist".[[134]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-134)

In 1998, the [Edward A. Bouchet](https://en.wikipedia.org/wiki/Edward_A._Bouchet)-ICTP Institute was renamed as the [Edward Bouchet Abdus Salam Institute](https://en.wikipedia.org/wiki/Edward_Bouchet_Abdus_Salam_Institute).[[135]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-135) In 2003, the [Government of Punjab](https://en.wikipedia.org/wiki/Government_of_Punjab_(Pakistan)) created an institute of excellence for the Mathematical Sciences, the [Abdus Salam School of Mathematical Sciences](https://en.wikipedia.org/wiki/Abdus_Salam_School_of_Mathematical_Sciences" \o "Abdus Salam School of Mathematical Sciences), in Salam's Alma mater – [Government College University](https://en.wikipedia.org/wiki/Government_College_University_(Lahore)).[[136]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-136)

That it has taken nearly four decades for this country to honour a globally renowned scientist who was one of its own, is a sad reflection of the priorities that hold sway here... For Dr Salam was an Ahmadi, a persecuted minority in Pakistan, and his faith rather than his towering achievements was the yardstick by which he was judged.

— [*Dawn*](https://en.wikipedia.org/wiki/Dawn_(newspaper)), [[137]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-137)

In 2008, in an opinion piece, [*Daily Times*](https://en.wikipedia.org/wiki/Daily_Times_(Pakistan)) called Salam "one of the greatest scientist Pakistan has ever produced".[[138]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-138)

In 2015, the Academy of Young Researchers and Scholars, Lahore, renamed its library as the "Abdus Salam Library".[[139]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-139) In the town of [Vaughan, Ontario](https://en.wikipedia.org/wiki/Vaughan,_Ontario), Canada, near the headquarters of the Canadian branch of the Ahmadiyya Community, of which Abdus Salam was a member, the community has named a street after him, 'Abdus Salam Street',[[140]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-140) while at [CERN](https://en.wikipedia.org/wiki/CERN) in [Geneva](https://en.wikipedia.org/wiki/Geneva), Switzerland there is '[Route Salam](https://en.wikipedia.org/wiki/List_of_streets_at_CERN)'. Additionally, there are two annual Abdus Salam science fairs, one held in Canada and the other in the US. Each is organised as a National event for young scientists from the Ahmadiyya Community in an effort to motivate youth toward scientific endeavour.[[141]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-141)

On 6 December 2016, Pakistan's Prime Minister [Nawaz Sharif](https://en.wikipedia.org/wiki/Nawaz_Sharif) approved the renaming of [Quaid-i-Azam University](https://en.wikipedia.org/wiki/Quaid-i-Azam_University)'s (QAU) physics centre to the Professor Abdus Salam Center for Physics. It was also announced that the *Professor Abdus Salam Fellowship* will be established, which will include five annual fully funded Pakistani PhD students in the field of Physics in "leading international universities".[[142]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-142)

In November 2020, [English Heritage](https://en.wikipedia.org/wiki/English_Heritage) erected a [blue plaque](https://en.wikipedia.org/wiki/Blue_plaque) in Salam's honour in Campion Road, Putney, London, at the house that was his London home for almost 40 years.[[143]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-143)[[144]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-144)

In June 2023, [Imperial College, London](https://en.wikipedia.org/wiki/Imperial_College,_London) announced the renaming of its [Imperial College Central Library](https://en.wikipedia.org/wiki/Imperial_College_Central_Library) as the Abdus Salam Library.[[145]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-145)

**research/experiment for which Nobel Prize was awarded**

Salam carried out his Nobel Prize–winning research at the Imperial College of Science and Technology in the 1960s. His [hypothetical](https://www.merriam-webster.com/dictionary/hypothetical) equations, which demonstrated an underlying relationship between the electromagnetic force and the weak [nuclear force](https://www.britannica.com/science/strong-force), postulated that the weak force must be transmitted by hitherto-undiscovered particles known as [weak vector bosons](https://www.britannica.com/science/intermediate-vector-boson), or W and Z bosons. Weinberg and Glashow reached a similar conclusion using a different line of reasoning. The existence of the W and Z bosons was eventually verified in 1983 by researchers using particle accelerators at [CERN](https://www.britannica.com/topic/CERN).

Prize motivation: “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”

Salam's notable achievements include the [Pati–Salam model](https://en.wikipedia.org/wiki/Pati%E2%80%93Salam_model" \o "Pati–Salam model), [magnetic photon](https://en.wikipedia.org/wiki/Magnetic_photon), [vector meson](https://en.wikipedia.org/wiki/Vector_meson), [Grand Unified Theory](https://en.wikipedia.org/wiki/Grand_Unified_Theory), work on [supersymmetry](https://en.wikipedia.org/wiki/Supersymmetry) and, most importantly, [electroweak theory](https://en.wikipedia.org/wiki/Electroweak_theory), for which he was awarded the Nobel Prize.[[8]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Nobel_Prize-8) Salam made a major contribution in [quantum field theory](https://en.wikipedia.org/wiki/Quantum_field_theory) and in the advancement of Mathematics at [Imperial College London](https://en.wikipedia.org/wiki/Imperial_College_London). With his student, [Riazuddin](https://en.wikipedia.org/wiki/Riazuddin_(physicist)" \o "Riazuddin (physicist)), Salam made important contributions to the modern theory on neutrinos, [neutron stars](https://en.wikipedia.org/wiki/Neutron_stars) and [black holes](https://en.wikipedia.org/wiki/Black_holes), as well as the work on modernising [quantum mechanics](https://en.wikipedia.org/wiki/Quantum_mechanics) and quantum field theory. As a teacher and science promoter, Salam is remembered as a founder and scientific father of [mathematical](https://en.wikipedia.org/wiki/Mathematical_physics) and theoretical physics in Pakistan during his term as the chief scientific advisor to the president.[[10]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-ICTP-10)[[19]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-19) Salam heavily contributed to the rise of Pakistani physics within the global [physics community](https://en.wikipedia.org/wiki/CERN).[[20]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-CERN_Courier-20)[[21]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-21) Up until shortly before his death, Salam continued to contribute to physics, and to advocate for the development of science in [third-world countries](https://en.wikipedia.org/wiki/Third_World).[[22]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-Abdus_Salam_-_Biography-22)

**available books related to him/her**

[**Unification of Fundamentals Physics: The First 1988 Dirac Memorial Lecture**](https://www.goodreads.com/book/show/8187317-unification-of-fundamentals-physics)  
by

[Abdus Salam](https://www.goodreads.com/author/show/646799.Abdus_Salam),

[John C. Taylor](https://www.goodreads.com/author/show/1270917.John_C_Taylor) (Foreword)

[**Fundamentals of Electrical Machines**](https://www.goodreads.com/book/show/5031962-fundamentals-of-electrical-machines)  
by

[Abdus Salam](https://www.goodreads.com/author/show/646799.Abdus_Salam)

[**Circuit Analysis**](https://www.goodreads.com/book/show/4368603-circuit-analysis)  
by

[Abdus Salam](https://www.goodreads.com/author/show/646799.Abdus_Salam)

[**Aspects of Quantum Theory**](https://www.goodreads.com/book/show/989246.Aspects_of_Quantum_Theory)  
by

[Abdus Salam](https://www.goodreads.com/author/show/646799.Abdus_Salam) (Editor),

[E.P. Wigner](https://www.goodreads.com/author/show/24726233.E_P_Wigner) (Editor)

# **Supergravities in Diverse Dimensions**

### [Abdus Salam (Editor)](https://www.goodreads.com/author/show/646799.Abdus_Salam), [Ergin Sezgin (Editor)](https://www.goodreads.com/author/show/116184.Ergin_Sezgin)

### Cosmic Anger: Abdus Salam The First Muslim Noble Scientist

#### **[By: Gordon Fraser](http://www.libertybooks.com/index.php?route=product/author/info&author_id=23730)**

### [Abdus Salam, a Biography](https://books.google.com/books?id=EKfvAAAAMAAJ&q=dr+abdus+salam+books&dq=dr+abdus+salam+books&hl=en&newbks=1&newbks_redir=1&printsec=frontcover&sa=X&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q6AF6BAgFEAI)

[books.google.com › books](https://books.google.com/books?id=EKfvAAAAMAAJ&q=dr+abdus+salam+books&dq=dr+abdus+salam+books&hl=en&newbks=1&newbks_redir=1&printsec=frontcover&sa=X&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q6AF6BAgFEAI)

[Jagjit Singh](https://www.google.com/search?sa=X&sca_esv=aa66105456fbfd1b&bih=552&biw=1242&hl=en-GB&tbm=bks&sxsrf=ACQVn08PsDgIbLfj3H8ZHMTOYK6zrPNMtQ:1707489657641&tbm=bks&q=inauthor:%22Jagjit+Singh%22&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q9Ah6BAgFEAU) · 1992 · ‎ Snippet view

Biography of a physicist from Pakistan.

### [Ideals and Realities: Selected Essays of Abdus Salam](https://books.google.com/books?id=084erO4KJCUC&printsec=frontcover&dq=dr+abdus+salam+books&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q6AF6BAgJEAI)

[books.google.com › books](https://books.google.com/books?id=084erO4KJCUC&printsec=frontcover&dq=dr+abdus+salam+books&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q6AF6BAgJEAI)

[Abdus Salam](https://www.google.com/search?sa=X&sca_esv=aa66105456fbfd1b&bih=552&biw=1242&hl=en-GB&tbm=bks&sxsrf=ACQVn08PsDgIbLfj3H8ZHMTOYK6zrPNMtQ:1707489657641&tbm=bks&q=inauthor:%22Abdus+Salam%22&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q9Ah6BAgJEAU), ‎[C. H. Lai](https://www.google.com/search?sa=X&sca_esv=aa66105456fbfd1b&bih=552&biw=1242&hl=en-GB&tbm=bks&sxsrf=ACQVn08PsDgIbLfj3H8ZHMTOYK6zrPNMtQ:1707489657641&tbm=bks&q=inauthor:%22C.+H.+Lai%22&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q9Ah6BAgJEAY), ‎[Azim Kidwai](https://www.google.com/search?sa=X&sca_esv=aa66105456fbfd1b&bih=552&biw=1242&hl=en-GB&tbm=bks&sxsrf=ACQVn08PsDgIbLfj3H8ZHMTOYK6zrPNMtQ:1707489657641&tbm=bks&q=inauthor:%22Azim+Kidwai%22&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q9Ah6BAgJEAc) · 1989

The latest edition of ?Ideals and Realities? includes some of the most recent talks given by Professor Abdus Salam. They replace a few essays which were published in the second edition.

### [Selected Papers of Abdus Salam: (with Commentary)](https://books.google.com/books?id=Bw4FUKdDbaUC&printsec=frontcover&dq=dr+abdus+salam+books&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q6AF6BAgLEAI)

[books.google.com › books](https://books.google.com/books?id=Bw4FUKdDbaUC&printsec=frontcover&dq=dr+abdus+salam+books&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q6AF6BAgLEAI)

[Abdus Salam](https://www.google.com/search?sa=X&sca_esv=aa66105456fbfd1b&bih=552&biw=1242&hl=en-GB&tbm=bks&sxsrf=ACQVn08PsDgIbLfj3H8ZHMTOYK6zrPNMtQ:1707489657641&tbm=bks&q=inauthor:%22Abdus+Salam%22&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q9Ah6BAgLEAU), ‎[Ahmed Ali](https://www.google.com/search?sa=X&sca_esv=aa66105456fbfd1b&bih=552&biw=1242&hl=en-GB&tbm=bks&sxsrf=ACQVn08PsDgIbLfj3H8ZHMTOYK6zrPNMtQ:1707489657641&tbm=bks&q=inauthor:%22Ahmed+Ali%22&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q9Ah6BAgLEAY) · 1994

This is a selection from over 250 papers published by Abdus Salam.

### [The Inspiring Life of Abdus Salam](https://books.google.com/books?id=1qeangEACAAJ&dq=dr+abdus+salam+books&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q6AF6BAgGEAI)

[books.google.com › books](https://books.google.com/books?id=1qeangEACAAJ&dq=dr+abdus+salam+books&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q6AF6BAgGEAI)

[Mujahid Kamran](https://www.google.com/search?sa=X&sca_esv=aa66105456fbfd1b&bih=552&biw=1242&hl=en-GB&tbm=bks&sxsrf=ACQVn08PsDgIbLfj3H8ZHMTOYK6zrPNMtQ:1707489657641&tbm=bks&q=inauthor:%22Mujahid+Kamran%22&ved=2ahUKEwiljIHUvp6EAxUZSaQEHTpWBc8Q9Ah6BAgGEAU) · 2013 · ‎ No preview

His book Jadeed Tabiyat Kay Bani won the National Book Council award in 2000.

## **Documentaries on Abdus Salam[[edit](https://en.wikipedia.org/w/index.php?title=Abdus_Salam&action=edit&section=13" \o "Edit section: Documentaries on Abdus Salam)]**

**Salam – the film**

LLC started formally researching and developing a film on the science and life of Abdus Salam in 2004, two years after the producers had conceived of the idea. A fundraising teaser was released by Kailoola Productions to coincide with Salam's birth anniversary on 29 January 2017.[[123]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-123) The post-production phase of this documentary film, pending funding, is estimated at US$150,000. The film *Salam: The First \*\*\*\*\*\* Nobel Laureate*, directed by the [Indian-American](https://en.wikipedia.org/wiki/Indian-American) documentary filmmaker Anand Kamalakar, was announced in 2018 and released on [Netflix](https://en.wikipedia.org/wiki/Netflix) in October 2019.[[124]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-124)[[125]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-125)

**Abdus Salam**

Pilgrim Films released *The Dream of Symmetry* in September 2011.[[126]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-126) Their press release describes it as presenting "the extraordinary figure of Abdus Salam, who not only was an outstanding scientist but also a generous humanitarian and a valuable person. His rich and busy life was an endless quest for symmetry, that he pursued in the universe of physical laws and in the world of human beings."[[127]](https://en.wikipedia.org/wiki/Abdus_Salam#cite_note-127)

**Gallery with various images of the personality should be added.**

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*The biography was written by Miriam Lewis, now at IAEA, Vienna, who was at one time on the staff of ICTP (International Centre For Theoretical Physics, Trieste).*

From [*Les Prix Nobel*](https://www.nobelprize.org/nobel_organizations/nobelfoundation/publications/lesprix.html)*. The Nobel Prizes 1979*, Editor Wilhelm Odelberg, [Nobel Foundation], Stockholm, 1980

This autobiography/biography was written at the time of the award and later published in the book series [*Les Prix Nobel/*](https://www.nobelprize.org/nobel_organizations/nobelfoundation/publications/lesprix.html)[*Nobel Lectures*](https://www.nobelprize.org/nobel_organizations/nobelfoundation/publications/lectures/index.html)*/*[*The Nobel Prizes*](https://www.nobelprize.org/nobel_organizations/nobelfoundation/publications/nobel-prizes.html). The information is sometimes updated with an addendum submitted by the Laureate.

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