



Erwin Schrödinger

Erwin Rudolf Josef Alexander Schrödinger (UK: /ˈrɛːdɪnər, ˈroʊdɪnər/, US: /ˈroʊdɪnər/,^[3] German: [ˈɛʁvɪn ˈʃøːdɪŋɐ]; 12 August 1887 – 4 January 1961), sometimes written as **Schroedinger** or **Schrodinger**, was an Austrian-Irish theoretical physicist who developed fundamental results in quantum theory. In particular, he is recognized for postulating the Schrödinger equation, an equation that provides a way to calculate the wave function of a system and how it changes dynamically in time. Schrödinger coined the term "quantum entanglement" in 1935.^{[4][5][6]}

In addition, he wrote many works on various aspects of physics: statistical mechanics and thermodynamics, physics of dielectrics, colour theory, electrodynamics, general relativity, and cosmology, and he made several attempts to construct a unified field theory. In his book *What Is Life?* Schrödinger addressed the problems of genetics, looking at the phenomenon of life from the point of view of physics. He also paid great attention to the philosophical aspects of science, ancient, and oriental philosophical concepts, ethics, and religion.^[7] He also wrote on philosophy and theoretical biology. In popular culture, he is best known for his "Schrödinger's cat" thought experiment.^{[8][9]}

Spending most of his life as an academic with positions at various universities, Schrödinger, along with Paul Dirac, won the Nobel Prize in Physics in 1933 for his work on quantum mechanics, the same year he left Germany due to his opposition to Nazism. In his personal life, he lived with both his wife and his mistress which may have led to problems causing him to leave his position at Oxford. Subsequently, until 1938, he had a position in Graz, Austria, until the Nazi

Erwin Schrödinger

ForMemRS



Schrödinger in 1933

Born	Erwin Rudolf Josef Alexander Schrödinger <div>12 August 1887</div> <div><u>Vienna, Austria-Hungary</u></div>
Died	4 January 1961 (aged 73) <div><u>Vienna, Austria</u></div>
Citizenship	Austria <div>Ireland (1948–1961)</div>
Alma mater	<u>University of Vienna</u> (PhD, 1910; <u>Dr. habil.</u> , 1914)
Known for	Formulating the <u>Schrödinger equation</u> (1925) <div>Introducing <u>Schrödinger's cat</u> (1935)</div>
Spouse	Annemarie Bertel (<u>m.</u> 1920)
Children	1
Father	<u>Rudolf Schrödinger</u>
Relatives	<u>Terry Rudolph</u> (grandson)
Awards	<u>Haitinger Prize</u> (1920)

takeover when he fled, finally finding a long-term arrangement in Dublin, Ireland, where he remained until retirement in 1955, and where he sexually abused several minors.

Biography

Early years

Schrödinger was born in Erdberg ([https://pl.m.wikipedia.org/wiki/Erdberg_\(Wiede%C5%84\)\)](https://pl.m.wikipedia.org/wiki/Erdberg_(Wiede%C5%84))), Vienna, Austria, on 12 August 1887, to Rudolf Schrödinger (cercloth producer, botanist^[10])^[11] and Georgine Emilia Brenda Schrödinger (née Bauer) (daughter of Alexander Bauer, professor of chemistry, TU Wien).^[12] He was their only child.

His mother was of half Austrian and half English descent; his father was Catholic and his mother was Lutheran. He himself was an atheist.^[13] However, he had strong interests in Eastern religions and pantheism, and he used religious symbolism in his works.^[14] He also believed his scientific work was an approach to divinity in an intellectual sense.^[15]

He was also able to learn English outside school, as his maternal grandmother was British.^[16] Between 1906 and 1910 (the year he earned his doctorate) Schrödinger studied at the University of Vienna under the physicists Franz S. Exner (1849–1926) and Friedrich Hasenöhr (1874–1915). He received his doctorate at Vienna under Hasenöhr. He also conducted experimental work with Karl Wilhelm Friedrich "Fritz" Kohlrausch. In 1911, Schrödinger became an assistant to Exner.^[11]

Middle years

In 1914 Schrödinger achieved habilitation (*venia legendi*). Between 1914 and 1918 he participated in war work as a commissioned officer in the Austrian fortress artillery (Gorizia, Duino, Sistiana, Prosecco, Vienna). In 1920 he became the assistant to Max Wien, in Jena, and in September 1920 he attained the position of ao. Prof. (*ausserordentlicher Professor*), roughly equivalent to Reader (UK) or associate professor (US), in Stuttgart. In 1921, he became o. Prof. (*ordentlicher Professor*, i.e. full professor), in Breslau (now Wrocław, Poland).^[11]

Matteucci Medal (1927)

Nobel Prize in Physics (1933)

Max Planck Medal (1937)

ForMemRS (1949)^[1]

Erwin Schrödinger Prize (1956)

Honours

 Pour le Mérite (1956)

Scientific career

Fields

Theoretical physics

Institutions

University of Breslau (1921–1921)

University of Zürich (1921–1927)

University of Berlin (1927–1933)

University of Graz (1936–1938)

Dublin Institute for Advanced Studies (1940–1955)

Thesis

Über die Leitung der Elektrizität auf der Oberfläche von Isolatoren an feuchter Luft (*About the Conduction of Electricity on the Surface of Insulators in Moist Air*) (<https://www.univie.ac.at/zbph/ausstellung/schroedinger/dokumente/dissertationpromotion.htm>) (1910)

Doctoral advisor

Friedrich Hasenöhr^[2]

Other academic advisors

Franz S. Exner

Writing career

Notable works

What is Life? (1944)

Signature



Karl Wilhelm Friedrich "Fritz" Kohlrausch. In 1911, Schrödinger became an assistant to Exner.^[11]

In 1921, he moved to the University of Zürich. In 1927, he succeeded Max Planck at the Friedrich Wilhelm University in Berlin. In 1933, Schrödinger decided to leave Germany because he strongly disapproved of the Nazis' antisemitism. He became a Fellow of Magdalen College at the University of Oxford. Soon after he arrived, he received the Nobel Prize in Physics together with Paul Dirac. His position at Oxford did not work out well; his unconventional domestic arrangements, sharing living quarters with two women,^[17] were not met with acceptance. In 1934, Schrödinger lectured at Princeton University; he was offered a permanent position there, but did not accept it. Again, his wish to set up house with his wife and his mistress may have created a problem.^[18] He had the prospect of a position at the University of Edinburgh but visa delays occurred, and in the end he took up a position at the University of Graz in Austria in 1936. He had also accepted the offer of chair position at Department of Physics, Allahabad University in India.^[19]

In the midst of these tenure issues in 1935, after extensive correspondence with Albert Einstein, he proposed what is now called the "Schrödinger's cat" thought experiment.^[20]

Later years

In 1938, after the Anschluss, Schrödinger had problems in Graz because of his flight from Germany in 1933 and his known opposition to Nazism.^[21] He issued a statement recanting this opposition.^[22] He later regretted doing so and explained the reason to Einstein: "I wanted to remain free – and could not do so without great duplicity".^[22] However, this did not fully appease the new dispensation and the University of Graz dismissed him from his post for political unreliability. He suffered harassment and was instructed not to leave the country. He and his wife, however, fled to Italy. From there, he went to visiting positions in Oxford and Ghent University.^{[22][21]}

In the same year he received a personal invitation from Ireland's Taoiseach, Éamon de Valera – a mathematician himself – to reside in Ireland and agreed to help establish an Institute for Advanced Studies in Dublin.^[23] He moved to Kincora Road, Clontarf, Dublin, and lived modestly. A plaque has been erected at his Clontarf residence and at the address of his workplace in Merrion Square.^{[24][25][26]} Schrödinger believed that as an Austrian he had a unique relationship to Ireland. In October 1940, a writer from the Irish Press interviewed Schrödinger who spoke of Celtic heritage of Austrians, saying: "I believe there is a deeper connection between us Austrians and the Celts. Names of places in the Austrian Alps are said to be of Celtic origin."^[27] He became the Director of the School for Theoretical Physics in 1940 and remained there for



Bust of Schrödinger, in the courtyard arcade of the main building, University of Vienna, Austria



Erwin Schrödinger as a young man



Schrödinger (front row 2nd from right) and De Valera (front row 4th from left) at Dublin Institute for Advanced Studies in 1942

17 years. He became a naturalized Irish citizen in 1948, but also retained his Austrian citizenship.^[28] He wrote around 50 further publications on various topics, including his explorations of unified field theory.^[29]

In 1944, he wrote *What Is Life?*, which contains a discussion of negentropy and the concept of a complex molecule with the genetic code for living organisms. According to James D. Watson's memoir, *DNA, the Secret of Life*, Schrödinger's book gave Watson the inspiration to research the gene, which led to the discovery of the DNA double helix structure in 1953. Similarly, Francis Crick, in his autobiographical book *What Mad Pursuit*, described how he was influenced by Schrödinger's speculations about how genetic information might be stored in molecules.^[30]

Schrödinger stayed in Dublin until retiring in 1955.

A manuscript "Fragment from an unpublished dialogue of Galileo"^[31] from this time resurfaced at The King's Hospital boarding school, Dublin^[32] after it was written for the School's 1955 edition of their Blue Coat to celebrate his leaving of Dublin to take up his appointment as Chair of Physics at the University of Vienna.^[33]

In 1956, he returned to Vienna (chair *ad personam*). At an important lecture during the World Energy Conference he refused to speak on nuclear energy because of his scepticism about it and gave a philosophical lecture instead. During this period, Schrödinger turned from mainstream quantum mechanics' definition of wave–particle duality and promoted the wave idea alone, causing much controversy.^{[34][35]}

Tuberculosis and death

Schrödinger suffered from tuberculosis and several times in the 1920s stayed at a sanatorium in Arosa in Switzerland. It was there that he formulated his wave equation.^[36] On 4 January 1961, Schrödinger died of tuberculosis, aged 73, in Vienna.^[37] He left Anny a widow, and was buried in Alpbach, Austria, in a Catholic cemetery. Although he was not Catholic, the priest in charge of the cemetery permitted the burial after learning Schrödinger was a member of the Pontifical Academy of Sciences.^[38]

Personal life

On April 6, 1920, Schrödinger married Annemarie (Anny) Bertel.^{[37][39]}

When he migrated to Ireland in 1938, he obtained visas for himself, his wife and also another woman, Hilde March. March was the wife of an Austrian colleague and Schrödinger had fathered a daughter with her in 1934.^[40] Schrödinger wrote to the Taoiseach, Éamon de Valera personally, so as to obtain a visa for March. In October 1939 the ménage à trois duly took up residence in Dublin.^[40] His wife, Anny (born 3 December 1896), died on 3 October 1965.

One of Schrödinger's grandchildren, Terry Rudolph, has followed in his footsteps as a quantum physicist, and teaches at Imperial College London.^{[41][42]}

Sexual abuse allegations

At the age of 39, Schrödinger tutored a 14-year-old girl named "Ithi" Junger. Walter Moore relates in his 1989 biography of Schrödinger that the lessons "included 'a fair amount of petting and cuddling'" and Schrödinger "had fallen in love with his pupil".^[43] Moore further relates that "not long after her seventeenth birthday, they became lovers". The relationship continued and in 1932 she became pregnant (then aged 20^[44]). "Erwin tried to persuade her to have the child; he said he would take care of it, but he did not offer to divorce [wife] Anny... in desperation, Ithi arranged for an abortion."

Moore describes Schrödinger having a 'Lolita complex'. He quotes from Schrödinger's diary from the time where he said that "men of strong, genuine intellectuality are immensely attracted only by women who, forming the very beginning of the intellectual series, are as nearly connected to the preferred springs of nature as they". A 2021 *Irish Times* article summarized this as a "predilection for teenage girls", and denounced Schrödinger as "a serial abuser whose behaviour fitted the profile of a paedophile in the widely understood sense of that term".^[45] Schrödinger's grandson and his mother were unhappy with the accusation made by Moore, and once the biography was published, their family broke off contact with him.^[46]

Carlo Rovelli notes in his book *Helgoland* that Schrödinger "always kept a number of relationships going at once – and made no secret of his fascination with preadolescent girls". In Ireland, Rovelli writes, he fathered children from two students^[47] identified in a *Der Standard* article as being a 26-year-old and a married political activist of unknown age.^[46] Moore's book described both of these episodes, giving the name Kate Nolan as a pseudonym for the first and naming the other as Sheila May, though neither were students.^[48] The book also described an episode of Schrödinger being "infatuated" with a twelve-year-old girl, Barbara MacEntee, while in Ireland. He desisted from attentions after a "serious word" from someone, and later "listed her among the unrequited loves of his life."^[49] This episode from the book was highlighted by the *Irish Times* article and others.^[46]

Walter Moore stated that Schrödinger's attitude towards women was "that of a male supremacist",^[50] but that he disliked the "official misogyny" at Oxford which socially excluded women. Helge Kragh, in his review of Moore's biography, said the "conquest of women, especially very young women, was the salt of life for this sincere romantic and male chauvinist".^[51]

The physics department of Trinity College Dublin announced in January 2022 that they would recommend a lecture theatre that had been named for Schrödinger since the 1990s be renamed in light of his history of sexual abuse,^[52] while a picture of the scientist would be removed, and the renaming of an eponymous lecture series would be considered.^[53]



Annemarie and Erwin Schrödinger's gravesite; above the name plate Schrödinger's quantum mechanical wave equation is inscribed on a circular plaque:

$$i\hbar\dot{\Psi} = H\Psi$$

Academic interests and life of the mind

Early in his life, Schrödinger experimented in the fields of electrical engineering, atmospheric electricity, and atmospheric radioactivity, but he usually worked with his former teacher Franz Exner. He also studied vibrational theory, the theory of Brownian motion, and mathematical statistics. In 1912, at the request of the editors of the *Handbook of Electricity and Magnetism*, Schrödinger wrote an article titled *Dielectrism*. That same year, Schrödinger gave a theoretical estimate of the probable height distribution of radioactive substances, which is required to explain the observed radioactivity of the atmosphere, and in August 1913 executed several experiments in Zeehame that confirmed his theoretical estimate and those of Victor Franz Hess. For this work, Schrödinger was awarded the 1920 Haitinger Prize (Haitinger-Preis) of the Austrian Academy of Sciences.^[54] Other experimental studies conducted by the young researcher in 1914 were checking formulas for capillary pressure in gas bubbles and the study of the properties of soft beta radiation produced by gamma rays striking a metal surface. The last work he performed together with his friend Fritz Kohlrausch. In 1919, Schrödinger performed his last physical experiment on coherent light and subsequently focused on theoretical studies.

Quantum mechanics

New quantum theory

In the first years of his career, Schrödinger became acquainted with the ideas of the old quantum theory, developed in the works of Einstein, Max Planck, Niels Bohr, Arnold Sommerfeld, and others. This knowledge helped him work on some problems in theoretical physics, but the Austrian scientist at the time was not yet ready to part with the traditional methods of classical physics.^[55]

Schrödinger's first publications about atomic theory and the theory of spectra began to emerge only from the beginning of the 1920s, after his personal acquaintance with Sommerfeld and Wolfgang Pauli and his move to Germany. In January 1921, Schrödinger finished his first article on this subject, about the framework of the Bohr–Sommerfeld quantization of the interaction of electrons on some features of the spectra of the alkali metals. Of particular interest to him was the introduction of relativistic considerations in quantum theory. In autumn 1922, he analyzed the electron orbits in an atom from a geometric point of view, using methods developed by his friend Hermann Weyl. This work, in which it was shown that quantum orbits are associated with certain geometric properties, was an important step in predicting some of the features of wave mechanics. Earlier in the same year, he created the Schrödinger equation of the relativistic Doppler effect for spectral lines, based on the hypothesis of light quanta and considerations of energy and momentum. He liked the idea of his teacher Exner on the statistical nature of the conservation laws, so he enthusiastically embraced the BKS theory of Bohr, Hans Kramers, and John C. Slater, which suggested the possibility of violation of these laws in individual atomic processes (for example, in the process of emission of radiation). Although the Bothe–Geiger coincidence experiment soon cast doubt on this, the idea of energy as a statistical concept was a lifelong attraction for Schrödinger, and he discussed it in some reports and publications.^[56]

Creation of wave mechanics

In January 1926, Schrödinger published in *Annalen der Physik* the paper "*Quantisierung als Eigenwertproblem*" (Quantization as an Eigenvalue Problem)^[57] on wave mechanics and presented what is now known as the Schrödinger equation. In this paper, he gave a "derivation" of the wave equation for time-independent systems and showed that it gave the correct energy eigenvalues for a hydrogen-like atom. This paper has been universally celebrated as one of the most important achievements of the twentieth century and created a revolution in most areas of quantum mechanics and indeed of all physics and chemistry. A second paper was submitted just four weeks later that solved the quantum harmonic oscillator, rigid rotor, and diatomic molecule problems and gave a new derivation of the Schrödinger equation. A third paper, published in May, showed the equivalence of his approach to that of Werner Heisenberg's matrix mechanics and gave the treatment of the Stark effect. A fourth paper in this series showed how to treat problems in which the system changes with time, as in scattering problems. In this paper, he introduced a complex solution to the wave equation in order to prevent the occurrence of fourth- and sixth-order differential equations. Schrödinger ultimately reduced the order of the equation to one.^[58]

Building on a paper by Einstein, Boris Podolsky, and Nathan Rosen, which introduced the thought-experiment now known as the EPR paradox, Schrödinger published in 1935 a paper that codified the concept of quantum entanglement.^[59] He deemed this quantum phenomenon "the one that enforces its entire departure from classical lines of thought."^[60]

Schrödinger was not entirely comfortable with the implications of quantum theory referring to his theory as "wave mechanics".^{[61][62]} He wrote about the probability interpretation of quantum mechanics, saying, "I don't like it, and I'm sorry I ever had anything to do with it." (In order to ridicule the viewpoints of Bohr and Heisenberg on quantum mechanics, he contrived the famous thought experiment called the Schrödinger's cat paradox.^[63] He was said to have angrily complained to his students that "*now the damned Göttingen physicists use my beautiful wave mechanics for calculating their shitty matrix elements*."^[64])

Work on a unified field theory

Following his work on quantum mechanics, Schrödinger devoted considerable effort to working on a unified field theory that would unite gravity, electromagnetism, and nuclear forces within the basic framework of general relativity, doing the work with an extended correspondence with Albert Einstein.^[65] In 1947, he announced a result, "Affine Field Theory",^[66] in a talk at the Royal Irish Academy, but the announcement was criticized by Einstein as "preliminary" and failed to lead to the desired unified theory.^[65] Following the failure of his attempt at unification, Schrödinger gave up his work on unification and turned to other topics. Additionally, Schrödinger reportedly never collaborated with a major physicist for the remainder of his career.^[65]

Color

Schrödinger had a strong interest in psychology, in particular color perception and colorimetry (German: *Farbenmetrik*). He spent quite a few years of his life working on these questions and published a series of papers in this area:

- "Theorie der Pigmente von größter Leuchtkraft", *Annalen der Physik*, (4), 62, (1920), 603–22 (Theory of Pigments with Highest Luminosity)

- "Grundlinien einer Theorie der Farbenmetrik im Tagessehen", *Annalen der Physik*, (4), 63, (1920), 397–456; 481–520 (Outline of a theory of colour measurement for daylight vision)
- "Farbenmetrik", *Zeitschrift für Physik*, 1, (1920), 459–66 (Colour measurement).
- "Über das Verhältnis der Vierfarben- zur Dreifarben-Theorie", *Mathematisch-Naturwissenschaftliche Klasse, Akademie der Wissenschaften, Wien*, 134, 471, (On The Relationship of Four-Color Theory to Three-Color Theory).
- "Lehre von der strahlenden Energie", *Müller-Pouillet's Lehrbuch der Physik und Meteorologie*, Vol 2, Part 1 (1926) (Thresholds of Color Differences).

His work on the psychology of color perception follows the step of Isaac Newton, James Clerk Maxwell and Hermann von Helmholtz in the same area. Some of these papers have been translated into English and can be found in: *Sources of Colour Science*, Ed. David L. MacAdam, MIT Press (1970) and in *Erwin Schrödinger's Color Theory, Translated with Modern Commentary*, Ed. Keith K. Niall, Springer (2017). ISBN 978-3-319-64619-0 doi:10.1007/978-3-319-64621-3 (<https://doi.org/10.1007%2F978-3-319-64621-3>).

Interest in philosophy

Schrödinger had a deep interest in philosophy, and was influenced by the works of Arthur Schopenhauer and Baruch Spinoza. In his 1956 lecture "Mind and Matter", he said that "The world extended in space and time is but our representation."^[67] This is a repetition of the first words of Schopenhauer's main work. Schopenhauer's works also introduced him to Indian philosophy, more specifically to the Upanishads and Advaita Vedanta's interpretation. He once took on a particular line of thought: "If the world is indeed created by our act of observation, there should be billions of such worlds, one for each of us. How come your world and my world are the same? If something happens in my world, does it happen in your world, too? What causes all these worlds to synchronize with each other?"

There is obviously only one alternative, namely the unification of minds or consciousnesses. Their multiplicity is only apparent, in truth there is only one mind. This is the doctrine of the Upanishads.^[68]

Schrödinger discussed topics such as consciousness, the mind–body problem, sense perception, free will, and objective reality in his lectures and writings.^{[68][69][70]}

Schrödinger's attitude with respect to the relations between Eastern and Western thought was one of prudence, expressing appreciation for Eastern philosophy while also admitting that some of the ideas did not fit with empirical approaches to natural philosophy.^[71] Some commentators have suggested that Schrödinger was so deeply immersed in a non-dualist Vedantic-like view that it may have served as a broad framework or subliminal inspiration for much of his work including that in theoretical physics.^[71] Schrödinger expressed sympathy for the idea of *Tat Tvam Asi*, stating "you can throw yourself flat on the ground, stretched out upon Mother Earth, with the certain conviction that you are one with her and she with you."^[72]

Schrödinger said that "Consciousness cannot be accounted for in physical terms. For consciousness is absolutely fundamental. It cannot be accounted for in terms of anything else."^[73]

He also anticipated the many-worlds interpretation of quantum mechanics.^{[74][75]} In 1952, he suggested that the different terms of a superposition evolving under the Schrödinger equation are "not alternatives but all really happen simultaneously".^[76] Schrödinger's later writings also contain elements resembling the modal interpretation originated by Bas van Fraassen. Because Schrödinger subscribed to a kind of post-Machian neutral monism, in which "matter" and "mind" are only different aspects or arrangements of the same common elements, treating the wavefunction as physical and treating it as information became interchangeable.^[77]

Legacy

The philosophical issues raised by Schrödinger's cat are still debated today and remain his most enduring legacy in popular science, while Schrödinger's equation is his most enduring legacy at a more technical level. Schrödinger is one of several individuals who have been called "the father of quantum mechanics". The large crater Schrödinger,^[78] on the far side of the Moon, is named after him. The Erwin Schrödinger International Institute for Mathematical Physics was founded in Vienna in 1992.^[79]

Schrödinger's portrait was the main feature of the design of the 1983–97 Austrian 1000-schilling banknote, the second-highest denomination.^[80]

A building is named after him at the University of Limerick, in Limerick, Ireland,^[81] as is the 'Erwin Schrödinger Zentrum' at Adlershof in Berlin^[82] and the Route Schrödinger at CERN, Prévessin, France.

Schrödinger's 126th birthday anniversary in 2013 was celebrated with a Google Doodle.^{[83][84]}

Awards and honors

- 1920: Haitinger Prize of the Austrian Academy of Sciences
- 1927: Matteucci Medal of the Accademia nazionale delle scienze
- 1931: Honorary membership of the Royal Irish Academy
- 1933: Nobel Prize in Physics for the formulation of the Schrödinger equation – shared with Paul Dirac^[85]
- 1937: Max Planck Medal of the German Physical Society
- 1949: Foreign membership of the Royal Society
- 1956: Erwin Schrödinger Prize of the Austrian Academy of Sciences



Erwin Schrödinger's Nobel Prize diploma

See also List of things named after Erwin Schrödinger.

Published works

- *Science and the human temperament*, Allen & Unwin (1935), translated and introduced by James Murphy, with a foreword by Ernest Rutherford.

- *Nature and the Greeks and Science and Humanism*, Cambridge University Press (1996) ISBN 978-0-521-57550-8.
- *The Interpretation of Quantum Mechanics*, Ox Bow Press (1995) ISBN 978-1-881987-09-3.
- *Statistical Thermodynamics*, Dover Publications (1989) ISBN 978-0-486-66101-8.
- *Collected papers*, Friedr. Vieweg & Sohn (1984) ISBN 978-3-7001-0573-2.
- *My View of the World*, Ox Bow Press (1983) ISBN 978-0-918024-30-5.
- *Expanding Universes*, Cambridge University Press (1956).
- *Space-Time Structure*, Cambridge University Press (1950) ISBN 978-0-521-31520-3.^[86]
- *What Is Life?*, Macmillan (1944).
- *What Is Life? & Mind and Matter*, Cambridge University Press (1974) ISBN 978-0-521-09397-2.

See also the [list of Erwin Schrödinger's publications](http://www.zbp.univie.ac.at/schrodinger/ebibliographie/publications.htm) (<http://www.zbp.univie.ac.at/schrodinger/ebibliographie/publications.htm>) (Archived (<https://web.archive.org/web/20191029234511/https://www.zbp.univie.ac.at/schrodinger/ebibliographie/publications.htm>) 29 October 2019 at the [Wayback Machine](#)), compiled by [Auguste Dick](#), [Gabriele Kerber](#), [Wolfgang Kerber](#) and [Karl von Meyenn](#).

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8. Walter J. Moore. *Schrödinger: Life and Thought*. Cambridge, England, UK: Press Syndicate of Cambridge University Press, 1989. p.194.
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12. Moore 1994, pp. 13–18.
13. Moore 1994, pp. 289–290 Quote: "In one respect, however, he is not a romantic: he does not idealize the person of the beloved, his highest praise is to consider her his equal. 'When you feel your own equal in the body of a beautiful woman, just as ready to forget the world for you as you for her – oh my good Lord – who can describe what happiness then. You can live it, now and again – you cannot speak of it.' Of course, he does speak of it, and almost always with religious imagery. Yet at this time he also wrote, 'By the way, I never realized that to be nonbelieving, to be an atheist, was a thing to be proud of. It went without saying as it were.' And in another place at about this same time: 'Our creed is indeed a queer creed. You others, Christians (and similar people), consider our ethics much inferior, indeed abominable. There is that little difference. We adhere to ours in practice, you don't.'"
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External links

- Erwin Schrödinger and others on Austrian banknotes (<http://www-personal.umich.edu/~jbourj/money1.htm>)
- 1927 Solvay video with opening shot of Schrödinger (<https://www.youtube.com/watch?v=8GZdZUouzBY>) on YouTube
- "biographie (<https://www.univie.ac.at/zbph/ausstellung/schroedinger/bio/bio1.htm>)" (in German) or
- "Biography from the Austrian Central Library for Physics (<https://www.univie.ac.at/zbph/ausstellung/schroedinger/bio/bio1.htm>)" (in English)
- Encyclopædia Britannica article on Erwin Schrödinger (<https://www.britannica.com/biography/Erwin-Schrodinger>)
- Erwin Schrödinger (<https://www.nobelprize.org/laureate/39>) on Nobelprize.org with his Nobel Lecture, 12 December 1933 *The Fundamental Idea of Wave Mechanics*
- Vallabhan, C. P. Girija, "Indian influences on Quantum Dynamics (<https://web.archive.org/web/20030816185613/http://www.photonics.cusat.edu/article2.html>)" [ed. Schrödinger's interest in Vedanta]

- Schrödinger Medal (<http://watoc.net/watoc.schroedinger.html>) of the World Association of Theoretically Oriented Chemists (WATOC)
- *The Discovery of New Productive Forms of Atomic Theory* Nobel Banquet speech (<https://web.archive.org/web/20051219215407/http://holiker.narod.ru/four/schrodinger-speech.html>) (in German)
- Annotated bibliography for Erwin Schrödinger from the Alsos Digital Library for Nuclear Issues (<https://web.archive.org/web/20190502072205/http://alsos.wlu.edu/qsearch.aspx?browse=people%2FSchr%C3%B6dinger%2C+Erwin>)
- (in Italian) Critical interdisciplinary review of Schrödinger's "What Is life?" (<https://disf.org/abiamo-studiato-per-voi/9788845911248>)
- Newspaper clippings about Erwin Schrödinger (<http://purl.org/pressemappe20/folder/pe/028043>) in the 20th Century Press Archives of the ZBW
- *Schrödinger in Oxford by Sir David C Clary* (<https://www.worldscientific.com/worldscibooks/10.1142/12661>), World Scientific, 2022

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