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Guide to the Niels Bohr Collection 1909-1963



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Descriptive Summary

Identifier	ICU.SPCL.BOHR
Title	Bohr, Niels. Collection
Date	1909-1963
Size	1.5 linear feet (3 boxes)
Repository	Special Collections Research Center University of Chicago Library 1100 East 57th Street Chicago, Illinois 60637 U.S.A.

Abstract Niels Bohr, Physicist. This collection contains documents pertaining to Niels Bohr, the Dutch physicist who made major contributions to understandings of atomic structure, nuclear fission, and nuclear policy. The materials include offprints of published writings by and about Bohr and his work. Some of Bohr's writings are coauthored with other physicists. The writings about Bohr both predate and postdate his death. The collection also includes mimeographed copies of letters and the transcripts of lectures. There are also photographs of Bohr and his laboratory staff and several printed brochures pertaining to Bohr, his laboratory, and related events.

Information on Use

Access

No restrictions.

Citation

When quoting material from this collection, the preferred citation is: Bohr, Niels. Collection, [Box #, Folder #], Special Collections Research Center, University of Chicago Library

Biographical Note

Niels Bohr was a Danish physicist who made tremendous contributions to his field, transforming accepted notions of atomic structure, helping to develop nuclear fission, and advocating for international cooperation in crafting responsible nuclear policy.

Bohr was born in Copenhagen in 1885 into a family that encouraged his academic pursuits. Christian Bohr, his father, was professor of physiology at the University of Copenhagen. Bohr credited his father for awakening his interest in physics at a young age. His mother, Ellen Adler Bohr, came from a wealthy Jewish family that was prominent in the field of education. Bohr's brother Harald was a mathematician and Olympic soccer player for the Danish national team.

Bohr graduated from Gammelholm Grammar School in 1903. He then entered Copenhagen University where he earned a Master's degree in Physics in 1909 and a doctorate in 1911. His mentor there, Professor C. Christiansen, was an innovative and well-respected physicist. During graduate school, Bohr won a gold medal from the Academy of Sciences in Copenhagen for his experimental and theoretical exploration of liquids' surface tensions using oscillating fluid jets. He performed the experiments in his father's laboratory, the results of which were published in 1908 in the Transactions of the Royal Society. Following the receipt of this award, however, his work became increasingly theoretical in character. His doctor's disputation, a theoretical explanation of the properties of metals that relied upon electron theory, remains a classic meditation on this subject.

Upon earning his doctorate, Bohr moved to Cambridge, where he pursued his own theoretical work while simultaneously observing the experimental work directed by Sir J.J. Thompson in the Cavendish Laboratory. In 1912 he moved to Manchester, where he worked in Professor Ernest Rutherford's laboratory. Rutherford's discovery of the atomic nucleus became the basis of Bohr's investigation of atomic structure. In 1913, Bohr developed his model of atomic structure, which held that electrons travel in orbits around an atom's nucleus. The chemical properties of the element, his theory held, were determined by the number of electrons in orbit. When an electron dropped from a high-energy orbit to a lower-energy orbit, it emitted a photon of discrete energy. This discovery was central to the development of quantum theory.

Bohr held the position of Lecturer in Physics at Copenhagen University from 1913-1914, and at Victoria University in Manchester from 1914-1916. In 1916, Bohr was appointed Professor of Theoretical Physics at Copenhagen University. From 1920 until his death in 1962, he led the Institute for Theoretical Physics, which was established for him and eventually named for him. In the 1920s and 1930s, Bohr's laboratory hosted most of the world's leading theoretical physicists.

In 1922, Bohr received the Nobel Prize in physics "for his services in the investigation of the structure of atoms and of the radiation emanating from them." Following his receipt of the Nobel Prize, Bohr increasingly investigated the constitution of atomic nuclei, including their transformations and declensions. Bohr also invented the principle of complementarity, the notion that items could be understood as having contradictory properties. Albert Einstein was a vocal opponent of this principle, and he and Bohr had several famous arguments over its feasibility.

While the Nazis occupied Denmark during World War II, Werner Karl Heisenberg, a top German physicist and Director of the Kaiser Wilhelm Institute for Physics, visited Bohr. In 1943, just before he was to be arrested by Nazi police, Bohr escaped to Sweden. He spent the remaining years of the war in England and the United States. In America, Bohr worked at the secret Los Alamos Laboratory on the Manhattan Project, where his assumed name was Nicholas

Baker. The younger scientists on the project valued Bohr's contribution as a mentor and consultant. His concern about a nuclear arms race, he explained, was "why I went to America. They didn't need my help in making the atom bomb."

Bohr believed that atomic secrets should be shared by all in the international scientific community. Bohr visited President Roosevelt to convince him to share the Manhattan Project with the Russians for the purpose of speeding its progress. Upon Roosevelt's suggestion, Bohr took this idea to England, where Prime Minister Churchill completely opposed the idea. After the war, Bohr returned to Copenhagen. He spent his last decades developing and promoting the peaceful applications of atomic physics. His Open Letter to the United Nations, published on June 9, 1950, sets forth his views. In his lifetime, Bohr authored or co-authored more than 115 published works.

Bohr married Margrethe Norlund in 1912. They had six sons, of whom two died in childhood. The other four led successful lives

Scope Note

The collection contains offprints of published writings by and about Bohr and his work. Some of Bohr's writings are coauthored with other physicists. The writings about Bohr both predate and postdate his death. The collection also includes mimeographed copies of letters and the transcripts of lectures and a debate between Bohr and Albert Einstein. There are also photographs of Bohr and his laboratory staff and several printed brochures pertaining to Bohr, his laboratory, and related events. The materials date from 1909 to 1963, the year after Bohr's death.

The collection is divided into three series. Series I, "Writings by Bohr," contains the page proofs and typescripts of several articles authored by Bohr. The series also includes a mimeographed copy of a letter from Bohr to fellow physicist Wolfgang Pauli and a mimeographed copy of an address given by Bohr at the Newton Tercentenary Celebration at the Royal Society of London.

Series II, "About Bohr," contains writings about the physicist. These include copies of speeches, letters and essays about Bohr, newspaper clippings about his accomplishments, and several booklets commemorating Bohr and his laboratory. There are also several photographs: one of Bohr, which contains his signature, and two others which are group shots of Bohr with his coworkers.

Series III, "Offprints," is divided into two subseries. The first, "Presentation Copies," consists of formal printed materials from which Bohr made presentations. The second, "Chronological List," contains all other offprints in the collection and is arranged by publication date. When a publication was co-authored, the other author or authors are listed.

Related Resources

The following related resources are located in the Department of Special Collections:

<http://www.lib.uchicago.edu/e/spcl/select.html>

Subject Headings

- Bohr, Niels Henrik David, 1885-1962
- Atomic Theory
- Atoms
- Complementarity
- Nuclear Reactions
- Physicists -- Denmark -- Biography
- Physics -- History
- Physicists -- History -- 20th Century
- Physics -- Nuclear Physics
- Physics -- Philosophy
- Quantum Theory
-
- Physicists -- Biography

INVENTORY

Series I: Writings by Bohr

Box 1

Folder 1

Typescript of *The Penetration of Atomic Particles Through Matter*. Kobenhaven, Munksgaard, 144 pp., 1948. (Author's copy, without corrections)

Box 1

Folder 2

Initial page proof of *The Penetration of Atomic Particles Through Matter*. Kobenhaven, Munksgaard, 144 pp., 1948. (With corrections)

Box 1

Folder 3

Final page proof of *The Penetration of Atomic Particles Through Matter*. Kobenhaven, Munksgaard, 144 pp., 1948. (With corrections)

Box 1

Folder 4

Über die Anwendung der Quantentheorie auf den Atombau, von Niels Bohr in Kopenhagen, pp. 117-165, 1922.

Box 1

Folder 5

"Newton's Principles and Modern Atomic Physics." Mimeographed copy of an address given at the Newton Tercentenary Celebration (Royal Society of London, 1946), 7 pp.

Box 1

Folder 6

"Discussion with Einstein on Epistemological Problems in Atomic Physics."
Mimeographed copy (1948) of an article published in the series "Living Philosophers" (1949) and reprinted in Atomic Physics and Human Knowledge. New York - Wiley, 101 pp., 1958.

Box 1

Folder 7

Carbon copy of a letter to Wolfgang Pauli (Nobel Prize 1945) dated May 16, 1947 and concerning the article: "Discussion with Einstein on Epistemological Problems in Atomic Physics."

Series II: About Bohr

Box 1

Folder 8

W. Heisenberg, "Niels Bohr zum funfzigsten Geburtstage am 7 Oktober 1935." Offprint from Die Naturwissenschaften 40, 679, 1935.

Box 1

Folder 9

L. Rosenfeld, "Niels Bohr. An Essay Dedicated to him on the Occasion of his Sixtieth Birthday, October 7, 1945." Amsterdam, North Holland, 1945, 18 pp.

Box 1

Folder 10

Aage Petersen, "Niels Bohr's Philosophy." Two talks given on the Danish Radio, April 1963, 20 pp. (Mimeographed)

Box 1

Folder 11

"The Niels Bohr Institute. October 7, 1965." Booklet commemorating Bohr's 80th Birthday, 17 pp.

Box 1

Folder 12

"Institute for Theoretical Physics. The Niels Bohr Institute. 1921-1971." Booklet commemorating the 50th Anniversary of the Institute.

Box 1

Folder 13

Collection of humorous material produced at the Institute in the late 1940s, including "Journal of Jocular Physics, Volume II, October 7, 1945" and a parody entitled "Faust, Eine Historie."

Box 1

Folder 14

Newspaper clippings and brief tributes to Bohr's achievements.

Box 1

Folder 15

Carbon copy of a letter dated 13 July 1947 to Dr. Jost from Bohr's son Aage Bohr.

Box 1

Folder 16

Postmarked envelope from S. Hellmann to Dr. Robert Platzman, Argonne National Laboratory, dated 21 November 1963.

Box 1

Folder 17

Signed portrait photograph of Bohr, 5 ¾" x 4 ¼"

Box 1

Folder 18

Three group photos at Bohr's Institute, late 1940s.

Box 1

Folder 19

Booklet from "Physics in 1922 - An Exhibit."

Series III: Offprints

Subseries 1: Presentation Copies

Box 2

Folder 1

"Determination of the Surface-Tension of Water by the Method of Jet Vibration." Royal Society of London, Philosophical Transactions, A 209, 281-317, 1909. Presentation copy of Bohr's first scientific publication, to Dr. E. Bloch.

Box 2

Folder 2

"On the Theory of the Decrease of Velocity of Moving Electrified Particles on Passing Through Matter." Philosophical Magazine 25, 10-31, 1913. Presentation copy of the first of Bohr's epochal papers of 1913, to G. von Hevesy (Nobel Prize 1943).

Box 2

Folder 3

"Uber die Serienspektren der Elemente." Zeitschrift fur Physik, 2 (5), 423-469, 1920. Presentation copy of Bohr's first lecture to the German Physical Society on his theory of spectra, to Prof. J. Franck (Nobel Prize 1925).

Box 2

Folder 4

"Das Quantenpostulat und die Neuere Entwicklung der Atomistik." Die Naturwissenschaften, 15, 18-257, 1928. Presentation copy to Prof. Dr. J. Franck.

Subseries 2: Chronological List

Box 2

Folder 5

"On the Determination of the Tension of a Recently-Formed Water Surface." Proceedings of the Royal Society, A, Volume 85, 1910.

Box 2

Folder 6

"On the Effect of Electric and Magnetic Fields on Spectral Lines." Philosophical Magazine, 506-524, March 1914 (3 copies).

Box 2

Folder 7

"On the Quantum Theory of Radiation and the Structure of the Atom." Philosophical Magazine, 394-415, September 1915 (2 copies).

Box 2

Folder 8

"On the Decrease of Velocity of Swiftly Moving Electrified Particles in Passing Through Matter." Philosophical Magazine, Vol. XXX, 581-612, October 1915.

Box 2

Folder 9

"On the Quantum Theory of Line-Spectra." Memoires de l'Academie Royale des Sciences et des Lettres de Danemark, Copenhague. Section des Sciences, 8me serie, t. IV, no. 1, fasc. 1, 118 pp., 1918.

Box 2

Folder 10

"Zur Frage der Polarisation der Strahlung in der Quantentheorie." Zeitschrift fur Physik, Band 6, Heft 1, 1-9, 1921.

Box 2

Folder 11

"Atomic Structure." Nature, March 24, 1921, 9 pp.

Box 2

Folder 12

"Atomic Structure." Nature, October 13, 1921, 4 pp.

Box 2

Folder 13

"On the Selection Principle of the Quantum Theory." Philosophical Magazine, Vol. XLIII, 1112-1116, June 1922.

Box 2

Folder 14

"The Structure of the Atom." Nature, July 7, 1923, 16 pp.

Box 2

Folder 15

"Rontgenspektren und periodisches System der Elemente." Zeitschrift fur Physik, Band 13, Heft 6, 117-165, 1923.

Box 2

Folder 16

"Uber die Anwendung der periodisches System der Elemente." Zeitschrift fur Physik, Band 34, Heft 2/3, 142-157, 1925.

Box 2

Folder 17

(with H.A. Kramers and J.C. Slater) "Uber die Quantentheorie der Strahlung." Zeitschrift fur Physik, Band 24, Heft 2, 69-87, 1924. Presentation copy by J.C. Slater.

Box 2

Folder 18

(with H.A. Kramers and J.C. Slater) "The Quantum Theory of Radiation." Philosophical Magazine, 785-802, Vol. XLVII, May 1924.

Box 2

Folder 19

"Uber die Wirkung von Atomen bei Stossen." Zeitschrift fur Physik, Band 34, Heft 2/3, 142-157, 1925.

Box 2

Folder 20

"Atomic Theory and Mechanics." Nature, December 5, 1925, 22 pp.

Box 2

Folder 21

"The Quantum Postulate and the Recent Development of Atomic Theory." Estratto dagli Atti del Congresso Internazionale dei Fisici Como, Settembre 1927 (V), 24 pp.

Box 2

Folder 22

Faraday Lecture - "Chemistry and the Quantum Theory of Atomic Constitution." Journal of the Chemical Society, 349-384, February 1932.

Box 2

Folder 23

"Atomic Stability and Conservation Laws." Estratto dagli Atti del Convegno di Fisica Nucleare della Fondazione Alessandro Volta, Ottobre 1931-IX, 16 pp.

Box 2

Folder 24

"Light and Life." Nature, Vol. 131, p. 421, March 5, and p. 457, April 1, 1933.

Box 2

Folder 25

(with L. Rosenfeld) "Zur Frage der Messbarkeit der Elektromagnetischen Feldgrößen." Det Kgl. Danske Videnskabernes Selskab. Matematisk-fysiske Meddelelser XII, 8, 65 pp, 1933.

Box 2

Folder 26

"Can Quantum-Mechanical Description of Physical Reality be Considered Complete?" Physical Review, Vol. 48, 696-702, 1935.

Box 2

Folder 27

"Neutron Capture and Nuclear Constitution." Nature, Vol. 137, p. 344, February 29, 1936.

Box 2

Folder 28

"Conservation Laws in Quantum Theory." Nature, Vol. 138, p. 25, July 4, 1936.

Box 2

Folder 29

(with F. Kalckar) "On the Transmutation of Atomic Nuclei by Impact of Material Particles - General Theoretical Remarks." Det Kgl. Danske Videnskabrtnrd Selskab. Matematisk-fysiske Meddelelser, XIV, 10, 40 pp., 1937.

Box 2

Folder 30

"Biology and Atomic Physics." Congressi Scientifici, Seduta Plenaria, Istituto di Fisica, Bologna, 19 Ottobre 1937-XV, 15 pp.

Box 2

Folder 31

(with John Archibald Wheeler) "The Mechanism of Nuclear Fission." *The Physical Review*, Vol. 56, September 1, 1939, 426-450.

Box 2

Folder 32

(with R. Peierls and G. Placzek) "Nuclear Reactions in the Continuous Energy Region." *Nature*, Vol. 144, Page 200, July 29, 1939.

Box 2

Folder 33

"Resonance in Uranium and Thorium Disintegrations and the Phenomenon of Nuclear Fission." *The Physical Review*, Vol. 55, No. 4, 418-419, February 15, 1939.

Box 2

Folder 34

"Successive Transformations in Nuclear Fission." *The Physical Review*, Vol. 58, No. 10, 864-866, November 15, 1940.

Box 2

Folder 35

"Velocity-Range Relation for Fission Fragments." *The Physical Review*, Vol. 59, No. 3, 270-275, February 1, 1941.

Box 3

Folder 1

"Nyere Undersogelser over Atomkernernes Omdannelser." *Saertryk af Fysisk Tidsskrift*, Nr. 1-2, 1941, 32 pp.

Box 3

Folder 2

"Dansk Kultur." *Nogle Indledende Bemaerkninger til Vaerket Danmarks Kultur ved AAr* 1940. Udgivet af Det Danske Selskab Paa Det Danske Forlag, 1 Aarene 1941-1943.

Box 3

Folder 3

"Atomic Physics and International Cooperation." *Proceedings of the American Philosophical Society*, Vol. 91 No. 2, 137-138, April 1947.

Box 3

Folder 4

"Om Maalingsproblemet i Atomfysikken." *Saertryk Matematisk Tideskrift*, B, 1946, Festskrift til Professor N.E. Nerlund. Anden del. 163-167.

Box 3

Folder 5

"Nyere Undersogelser over Atomkernernes Omdannelser." *Saertryk ur Svenska Fysikersamfundets publication Kosmos*, band 24, 1946, 24-57.

Box 3

Folder 6

(with J.C. Jacobsen) "Martin Knudsen. 15 Februar 1871-27 Maj 1949." 11 pp.

Box 3

Folder 7

"On the Notions of Causality and Complementarity." *International Review of Philosophy and Knowledge, Dialectica*, 312-319.

Box 3

Folder 8

"Discussion with Einstein on Epistemological Problems in Atomic Physics." The Library of Living Philosophers, Vol. VII, 201-241, 1949.

Box 3**Folder 9**

"On the Notions of Causality and Complementarity." Science, Jan 20 1950, Vol. III, no. 2873, 51-54.

Box 3**Folder 10**

"Mindehojtideligheden pa Kobenhavns universitet den 9. marts 1951 oa hundredarsdagen for Hans Christian Orstedes dod." Saetryk af Fysisk Tidsskrift, 35 pp.

Box 3**Folder 11**

"Atomphysik und internationale Zusammenarbeit." Zeitschrift fur Wissenschaft, Kunst und Literatur, 6 Jahrgang, Heft 5, 547-550, Mai 1951.

Box 3**Folder 12**

"Hendrik Anthony Kramers." Nederlandsch Tijdschrift voor Natuurkunde, Vol. 18,m 161-166, 1952.

Box 3**Folder 13**

"Medical Research and Natural Philosophy." Acta Medica Scandinavica, Supplementum CCLXVI (266), (Accompanies Vol. CXLII (142)), 967-972, 1952.

Box 3**Folder 14**

"Physical Science and the Study of Religions." Studia Orientalia Ioanni Pedersen, Septuagenario, A.D. VII ID, Nov. Anno MCMLIII, 385-390.

Box 3**Folder 15**

(with I.I. Rabi). "Albert Einstein - 1897-1955." Scientific American, Vol. 192, no. 6, 31-33, June 1955.

Box 3**Folder 16**

"Physical Science and Man's Position." Ingenioren, Nr. 41, 810-814, 5 Oktober 1955.

Box 3**Folder 17**

"Rydberg's Discovery of the Spectral Laws." Proceedings of the Rydberg Centennial Conference on Atomic Spectroscopy, 15-21.

Box 3**Folder 18**

"Atomerne og den Menneskelige Erkendelse." Saetryk af Oversigt over Det. Kgl. Danske Videnskabernes Selskabs Virksomhed, 13 pp., 1955-1956.

Box 3**Folder 19**

"Mathematics and Natural Philosophy." The Scientific Monthly, Vol. 82, No. 2, 85-88, February 1956.

Box 3

Folder 20

"Über Erkenntnisfragen der Quantenphysik." Sonderdruck aus der Max-Planck-Festschrift 1958, pp. 308-314.

Box 3

Folder 21

"On Atoms and Human Knowledge." Daedalus: Proceedings of the American Academy of Arts and Sciences, Vol. 87, No. 2, 164-174, 158.

Box 3

Folder 22

"Quantum Physics and Philosophy-Causality and Complementarity." Philosophy in the Mid-Century, edited by Raymond Klibansky. Florence, 1958, pp. 308-314.

Box 3

Folder 23

"Quantum Physics and Biology." Symposia of the Society for Experimental Biology, No. XIV, 1-5, 1960.

Box 3

Folder 24

"Den menneskelige erkendelses enhed." Særtryk af Barlingske Tidendes kronik, den 22, Oktober 1960, 7 pp.

Box 3

Folder 25

"Die Einheit Menschlicher Erkenntnis." Sonderdruck aus Europa, Monatszeitschrift für Politik, Wirtschaft, Kultur, 3 pp., August 1961.

Box 3

Folder 26

"The Rutherford Memorial Lecture 1958 - Reminiscences of the Founder of Nuclear Science and of Some Developments Based on His Work." Proceedings of the Physical Society, Vol. LXXVIII, 1083-1115, 1961.

Box 3

Folder 27

Footnotes to "The Rutherford Memorial Lecture 1958: Reminiscences of the Founder of Nuclear Science and of Some Developments Based on His Work." Proceedings of the Physical Society, Vol. LXXVIII, 1083-1115, 1961.

Box 3

Folder 28

"The Solvay Meetings and the Development of Quantum Physics." Institut International de Physique, Douzieme Conseil de Physique, 1-24, 9 au 14 Octobre 1961.

Box 3

Folder 29

"Physical Models and Living Organisms." Light and Life, 3 pp., Johns Hopkins Press, 1961.

Box 3

Folder 30

"Atomvidenskaben og Menneskehedens Krise." Særtryk af Politikens Kronik, 20. 4. 1961.

Box 3

Folder 31

"Über die Einheit unsaeres Wissens." Zeitschrift für Wissenschaft, Kunst und Literatur, 16 Jahrgang, Heft 8, 835-840, August 1961.

Box 3

Folder 32

"Die Entstehung der Quantenmechanik." Sonderdruck aus Werner Heisenberg und die Physik unserer Zeit, Verlag Friedr. Vieweg & Sohn, Braunschweig, 4 pp.

Box 3

Folder 33

"Licht und Leben-Noch Einmal." Sonderdruck aus die Naturwissen-schaften, 50 Jahrgang, Hef6 24, 725-727, 1963.

Box 3

Folder 34

"Light and Life Revisited." I.C.S.U. Review, Vol. 5, 194-199, 1963.