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Page 6Page 7Page 8Page 10Page 11Page 12Page 13Page 14Page 15Page 16Page 17Ase institution 18 American Institute of Chemical Engineers 120 Wall St., 23rd Floor New York, NY 10005 1-800-AIChemE (1-800-242-4363) (203) 702-7660 www.aiche.org Skip to Slater Main Content, John C. New York: McGraw-Hill, 1951. First edition. Hardcover. 8vo. Very good in good only jacket. Splintered and worn jacket. Tap the shelfwear you want to book. Perfectly written and intelligent contemporary notes for retropapers. More clean and sound throughout. Not common in jacket. Very good/good. Article #13784 of the international series in pure and applied physics. 528pp. with index. Price: $60.00 Add to cart Ask a question See all science and technology articles See all john c. slater articles For other people named John Slater, see John Slater (disambiguation). John C. SlaterJohn Clarke Slater 1952 in LondonBorn(1900-12-22)22 December 1900Oak Park, IllinoisDied25 July 1976(1976-07-25) (age 75)Sanibel Island, FloridaNationalityAmericanAlma materUniversity of Rochester (B.S.) (1920) Harvard University (Ph.D) (1923)Known for SlaterDegniSlater type orbitals determines the rules of Slater-CondonSlater integralsSlater-Koster modelBethe-Slater curveSlater-Kirkwood approximationMu AwardsIrving Langmuir Award (1967)National Medal of Science (19)National Medal of Science (19)National Medal of Science (197)National Medal of Science (19)National Medal of Science (19)National Medal of Science (197)National Medal of Science (199)National Medal of Science (199)National Medal of Science (199)National Medal of Science (199)70)Scientific careerFieldsPhysicsInstitutionsUniversity of Cambridge University of CopenhagenHarvard UniversityMITBell LaboratoriesBrookhaven National LaboratoryUniversity of FloridaThesisThe Compressibility of the Alkali-Halides (1923)Doctoral advisorPercy Williams BridgmanDoctoral studentsMarvin ChodorowDavid S. SaxonWilliam Corbat-Donald John Clarke Slater (December 22, 1900 – July 25, 1976) was a well-known American physicist who made important contributions to the theory of the electronic structure of atoms, molecules, and solids. [1] [2] [3] He also made an important contribution to microwave electronics. [1] He received a B.S. in Physics from the University of Rochester in 1920 and a Ph.D. in Physics from Harvard in 1923, then worked after his Doctorate from the Universities of Cambridge (briefly) and Copenhagen. On his in the United States he joined harvard's Department of Physics. In 1930, Karl Compton, president of MIT, appointed Slater president of MIT's Department of Physics. He reformed his university physics curriculum, wrote 14 books between 1933 and 1968, and built a department of great international prestige. During World War II, his work on microwave transmission, carried out partly at Bell Laboratories and in association with the MIT Radiation Laboratory, was of great importance in the development of radar. In 1950, Slater founded the Solid State and Molecular Theory Group (SSMTG) within the Physics Department. The following year, he resigned as chair of the department and spent a year at the Brookhaven National Laboratory of the Atomic Energy Commission. He was appointed Professor of Physics at the Institute and continued to lead the work at the SSMTG until he retired from MIT in 1965, at the compulsory retirement age of 65. He then joined the Quantum Theory Project at the University of Florida as a research professor, where the retirement age allowed him to work for another five years. The SSMTG was considered[1] as the forerunner of the MIT Center for Materials Science and Engineering (CMSE). [4] His scientific autobiography[5] and three interviews[6][7] present his views on research, education, and the role of science in society. In 1964, Slater and his then 92-year-old father, who had headed the Department of English at the University of Rochester many years earlier, received honorary degrees from that university. Slater's name is part of the terms Bohr-Kramers-Slater theory, Slater decisive and Slater orbital. Slater's Virginia-born father, who had been a student at Harvard, became head of the Department of English at the University of Rochester, which would also be Slater's university alma mater. Slater's youthful interests were with mechanical, chemical and electrical things. A family aide, a college girl, finally put a name (then little known as subject) to her set of interests: physics. When Slater entered the University of Rochester in 1917 he took courses in physics and as a senior assisted in the physics laboratory and did his first independent research for a special thesis, a measurement of the pressure dependence of the intensities of balmer hydrogen lines. He was accepted to harvard's graduate school, with the choice of a scholarship or assistant. He chose the assistant, during which time he worked for Percy W. Bridgman. He attended Bridgman's courses in fundamental physics and was introduced to quantum physics then new with the courses of E. C. Kemble. He completed his Ph.D. work in three years by publishing his article (1924) Compressibility of the Alkali Halides, which embodied the thesis work he had done under Bridgman. his heart was in theory, and his first publication was not his doctor's thesis, but a note (1924) to Nature on Radiation and Atoms. [8] After His Ph.D., Slater held a Hamard Sheldon Fellowship to study in Europe. He spent time in Cambridge, England, before going to Copenhagen. Back in America, Slater joined harvard's Department of Physics. Professional career as president of mit's physics department When he became president of MIT, Karl Compton courted Slater to chair the Physics Department. [9] The administration (of the Department) took a lot of time, longer than he (Slater) would have preferred. John was a good president. [1] The following elements of the subsequent issues of the annual MIT President's Report[10] trace the growth and visibility of the Department under Slater's leadership, prior to World War II, and the Department's ability to contribute to defense during the war. The first two citations are from chapters written by Compton in later reports. The other quotes come from the department sections, which Slater wrote. These include statements that influence policies in physical education and research in general, and show his deep commitment to both. 1930: The selection of Dr. John C. Slater as head of the Physics Department will strengthen ... university work and graduate ... the limitation of space has delayed the development of graduate work ... the total number of graduates is 53 and ... graduate students 16. (p. 21) 1931: This was the first year of the Department in charge of its new head, Professor John C. Slater ... subjects actively (sought after include) Spectroscopy, Applied Optics, discharge of electricity into gases, magneto-optical phenomena, Dielectric studies and various aspects of modern and classical theoretical physics. (p. 42) 1932: In the list of articles published by mit faculty, Articles 293 to 340 are listed under the Department of Physics. (p. 206-208) 1933: The George Eastman Research Laboratory, where the Department moved earlier this year, provides for the first time a suitable home for physics research at the Institute. [11] Slater states that external recognition is demonstrated by the holders of six Nationals, an International, and a Rockefeller Research Exchange who choose to come to the Department. Slater describes the dedication of the Laboratory, the organization of meetings of the International Astronomical Union, the American Physical Society and a spectroscopic conference, and concludes: In general the year was to settle down to work in satisfactory conditions, after the most difficult transition of the previous year. (p. 96-98) 1934: Several advances in university education have been made or planned. Among the department's most notable events, we acted as a guest at meetings of the National Academy of Sciences, the American Association for the Advancement of Science, the American Physical Society, and national spectroscopic conference, where the main topic was the relationship with biology and related fields. Progress in research has been unusual structures in the Department, and include Warren's work on liquid structure, Mueller on dielectric properties, Stockbarger on crystal physics, Harrison on automated spectroscopic measurement, Wulff on hyperfine structure, Boyce on nebulae spectra, Van der Graaff on high voltage and nuclear research, and Stratton and Morse on ellipsoid wave functions. (p. 104-106) 1935: Particular attention is paid to the main improvements in university education. The extensive comments on the research mention the arrival of Robley Evans[12] and his work on a new field for the department: radioactivity, with a focus on nuclear medicine. (p. 102-103) 1936: The most important development of the year in the Department was the increasing recognition of the meaning of applied physics. In the past there has been a tendency among physicists to take an interest only in the direct line of development of their science and to neglect its applications. Slater develops this theme for a long time, and describes the actions within the department's university work, graduate and lecturer and nationally to develop applied physics. The description of the thriving basic research refers to ten different areas, including the increase in work on radioactivity. (p. 131-134). 1937-1941: These continue in the same vein. But world affairs are beginning to make an impact. The 1941 report ends: The X-ray branch was hosted by Professor Rose C. L. Mooney of Newcomb College, who was prevented by the war from carrying out research in Europe under a Guggenheim Scholarship... At the end of the year, the National Defense effort is beginning to claim the services of a number of staff members. Presumably next year will see a major intensification of the effort, although it is hoped that interference with regular research and teaching will not be too serious. (p. 129) 1942: This told a very different story. The defence effort had begun to involve a considerable number of personnel, as well as a good deal of administrative work. With the opening of the National Defense Research Committee's Radiation Laboratory at the Institute, a number of Department staff members became associated with that lab followed by a list of more than 10 senior faculties they had, and many more went to other defense projects. (p. 110-111) 1943-1945: Slater took leave as president, to work on topics of importance on the radar. The American Mathematical Society chose him as josiah Willards Gibbs lecturer for 1945. [13] [14] 1946: Slater returned as president. His report begins: The year of conversion from the war to peace was one of the greatest activities. ... Physics during the war has reached an importance that is probably not been achieved by no other science. The Institute, as the country's leading technical institution and probably the world's, should have an unparalleled physics department everywhere. List plan plans this objective, which is proliferating its administrative responsibilities. (p. 133-143) Creation of interdepartmental laboratories, restructuring existing laboratories using, as a model, the conversion of the Radiation Laboratory into the Electronics Research Laboratory (RLE) of Julius Stratton and Albert Hill. Fund student assistants and help shape the role of public funding on an unprecedented scale. Oversee Robley Evans' Radioactivity Center (containing a cyclotron) and Van de Graaff's High Tension Laboratory. Recruit physicists familiar with the Manhattan project to build the Laboratory for Nuclear Science and Engineering. [15] This was directed by Jerrold .acharias. Its first members were Bruno Rossi and Victor Weisskopf. Set up the Acoustics Laboratory, directed by Richard Bolt, and the Spectroscopy Laboratory directed by chemist Richard Lord. 1947: With the hiring of personnel and the construction of well-held laboratories, Slater begins: The year in the Department of Physics, as in the rest of the Institute, was one to begin the large-scale teaching of returned veterans and other students whose academic career had been interrupted by the war. He continues to discuss the needs of students throughout the Institute for physics courses and laboratories, with particular mention of the resurgence of electronics and nuclear science, and briefly reports on developments since his previous report. (p. 139-141) 1948: Slater starts This year is the first since the war in which the department approached normal operation. No major new projects or policy changes have been introduced. But the department he built is very different from what it was when he started. Sixteen master's degrees and 47 doctor's degrees were granted. Twenty-five PhD students have obtained academic appointments at MIT and other universities. The research flourished, and many scientists visited from European universities and other parts of the United States (p. 141-143) 1949: the new normal continued. The approach to a stable post-war state continued with few unusual events. The graduate curriculum has been revised and cryogenics has improved. The continued growth of staff, research grants, industrial contacts and publication volume are treated as continuity issues, eventually acknowledging that: The department's administrative burden has grown so much (it has become) wise to appoint an executive officer. Nathaniel Frank,[16] who had worked with John Slater for nearly two decades, accepted the post. (p. 149-153) 1950: The future of the Department had been fixed. There have been few unexpected changes. And with the continuous growth, almost every research project in the Department has been interested in university research. (p. 189-191) 1951: Stratton writes Professor John C. Slater has resigned as head of the Physics Department and has been appointed Harry B. Higgins Professor of Solid State, the appointment that will bear the title of Professor of the Institute. Professor Slater has been granted leave for next year to continue the research at Brookhaven National Laboratory. (p. 30) During his presidency, Slater taught, wrote books, produced ideas of great scientific importance, and interacted with colleagues from all local, national, and international scientific communities. On a personal level, Morse says: Through most of the 1930s he looked more like a graduate than a head of department... could make his guests weak with laughter simply counting ... in Danish. Much later, S.B. Trickey wrote: While I knew him well enough, I was never able to call J.C. Slater by his name. His apparent detachment turned out to be more timid. [17] Research Atoms, molecules and solids: The research that preceded World War II Back in time to 1920, Slater had gone to Harvard to work for a Ph.D. with Percy Bridgman, who studied the behavior of substances under very high pressures. Slater measured the compressibility of common salt and ten other halides alkalides: lithium, sodium, potassium and rubidium compounds, with fluorine, chlorine and bromine. He described the results as exactly in accordance with Bohr's recent views on the relationship between electron structure and periodic table. This brought Slater's observation about the mechanical properties of ion crystals in line with Bohr's theory of spectroscopy of gaseous elements. He wrote the alkali newspaper halyogenide in 1923, having by the summer of 1922 been completely indoctrinated ... with quantum theory, partly from Edwin Kemble's courses following a fascination with Bohr's work during his graduation days. In 1924, Slater went to Europe with a Harvard Sheldon Fellowship. After a short stay at Cambridge University, he went to the University of Copenhagen, where he explained to Bohr and Kramers his idea (which was) a kind of precursor to the principle of duality, (hence) the famous article on the work that others overdo the Bohr-Kramers-Slater theory (BKS). Slater suddenly became an internationally known name.. [18] Interest in this old quantum theory paper subsided with the arrival of complete quantum mechanics, but Philp M. Morse's biography states that in recent years it has been recognized that the correct ideas in the article are those of Slater. Slater talks about his early years of life during his trip to Europe in a transcribed interview. Slater joined harvard faculty on his return from Europe in 1925, then moved to MIT in 1930. His research papers covered many topics. A year-by-year selection, until his transition to radar work includes: 1924: the theoretical part of his doctoral work,[20] the theory (BKS), 1925: spectral line widths; [22] Ideas that came very close to the electron spin principle,[23] 1926 and 1927: explicit attention to electron spin,[24] electrons,[24] to the Schroinger equation; [25] 1928: Hartree's self-consistent field,[26] Rydberg's formula,[27] 1929: the decisive expression for an antihymmymetric wave function,[28]] 1930: Slater type orbitals (STO) and atomic shielding constants,[29] 1931: linear combination of atomic orbitals,[30] van der Waals forces[31] (with Jack Kirkwood, as Chemistry Research Associate). 1932-1935: atomic orbitals,[32] metal conduction,[33] application of the Thomas-Fermi method to metals,[35] 1936: ferromagnetism,[36] (with Erik Rudberg, later Chairman of the Committee of the Nobel Prize in Physics) inelastic scattering,[37] and (with his PhD student William Shockley and close to his doctoral topic), optical properties of alkali halides[38] 1937 and 1938: increased flat waves ,[39] superconductivity ,[40] ferromagnetism,[41] electrodynamics,[42] 1939 published only one book: the definitive introduction to chemical physics, 1940 the Groneisen constant,[43] and the curie point,[44] 1941 phase transition analogous to ferromagnetism in potassium dihydrogen phosphate. [45] In his memoirs,[1] Morse wrote: In addition to other noteworthy documents... On... Hartree's self-consistent field, the quantum mechanical derivation of the Rydberg constant,[27] and the best values of atomic shielding constants,[29] wrote a seminal article on valency direction[30] (what became known later as a linear combination of atomic orbitals). In further comments,[18] John Van Vleck pays particular attention to (1) the 1925 study of hydrogen and ionized helium spectra,[23] and J.V.V. considers a sentence short of proposing electronic spin (which would have led to the sharing of a Nobel Prize), and (2) what J.V.V. considers Slater's greatest document, which mathematics introduced the object now called Slater. [28] These were some of the results (which led to his) election to the National Academy... To... 31. He played a key role in lifting American theoretical physics to a high international position. Slater's ph.D. students during this period included Nathan Rosen Ph.D. in 1932 for a theoretical study of the hydrogen molecule, and William Shockley Ph.D. 1936 for an energy band structure of sodium chloride, which later received a Nobel Prize for the discovery of the transistor. Research during the war and return to peacetime activities Slater, in his experimental and theoretical work on magnetron (key elements parallel to his previous work with self-consistent fields for atoms[1]) and on other topics at the Radiation Laboratory and Bell Laboratories did more than any other person to provide the necessary understanding to progress in the field of microwave , in the words of Mervin Kelley, then head of Bell Labs, quoted by Morse. [1] Slater's publications during the war postwar recovery include a book and articles on microwave transmission and microwave electronics,[46] linear accelerators,[48] cryogenic,[49] and, with Francis Francis and many other colleagues, superconductors,[50] These publications credit many other scientists, mathematicians, and engineers who participated. Among them, George H. Vineyard received his Ph.D. with Slater in 1943 for a study of the spatial charge in the magnetron of the cavity. Later, he became director of Brookhaven National Laboratory and president of the American Physical Society. [51] The work of the Radiation Laboratory paralleled research at the Telecommunications Research Establishment in England and the groups maintained a productive link. [46] The activities of the Solid State and Molecular Theory Group In the words of Robert Nesbet: Slater founded the SSMTG with the idea of bringing together a younger generation of students and PostDoc with a common interest in the electronic structure and properties of atoms, molecules, and solids. This was partly to serve as a balance for electronic physics to survive the overwhelming growth of nuclear physics after the war. George Koster soon completed his Ph.D., joined the faculty and became the oldest member of the group. He wrote: During the group's fifteen years of life about sixty people were members and thirty-four took doctoral degrees with theses related to his work. In my report I have not been able to separate Slater's work from that of the group as a whole. It was part of every aspect of the group's research efforts. [53] Nesbet continued Every morning in SSMTG began with a coffee session, chaired by Professor Slater, with junior members sitting around a long table... Each member of the group should have contributed a summary of their work and ideas to the quarterly progress report. [52] SMMTG QPR had a wide distribution to university and industrial research libraries, and individual laboratories. They have been widely cited for scientific and biographical content, in journal articles and government reports and libraries are starting to put them online. [54] To begin the group's work, Slater distilled his experience with the hartree self-consistent field method into (1) a simplification that became known as the X method,[55] and (2) a relationship between a characteristic of this method and a magnetic property of the system. [56] These calculations required excessive calculations for pencil and paper work. Slater was quick to use the SSMTG of electronic computers that were being developed. A first article on aircraft waves increased[57] used an IBM board-programmed calculator. The Turbine was used heavily, then the IBM 704 in the MIT Computation Center and then the IBM 709 in the Cooperative Computing Laboratory (see below). Solid state work progresses faster early in the SSMTG, with contributions in the early years of George Koster, John Wood, Arthur and Leonard Mattheis. Molecular and atomic calculations also flourished in the hands of Fernando J. Corbat, Lee Allen, and Alvin Meckler. This initial work followed the lines largely Michael Barnett arrived in 1958. He and John Wood were assigned faculty appointments. Robert Nesbet, Brian Sutcliffe, Malcolm

Harrison and Levente Szasz have introduced a number of further approaches to molecular and atomic problems. Jens Dahl, Alfred Switendick, Jules Moskowitz, Donald Merrifield and Russell Pitzer have done further work on molecules, and Fred Quelle on solids. Slater rarely included his name on the cards of SSMTG members working with him. The main works he co-authored were dealing with applications of group theory in band structure calculations[58] and (2) equivalent characteristics of linear atomic orbital combination (LCAO), narrow binding, and bloc wave approximations, to interpolate results for solid energy levels, obtained by more accurate methods,[59] People A partial list of members of the SSMTG (Ph.D. , postdoctoral members, research staff and faculty, in some cases subsequently labelled as †, ‡, ↻,), together with references reporting their SSMTG and subsequent activities, follows. Leland C. Allen †‡, molecular calculations ab initio, electroegativity, Professor of Emeritus Chemistry, Princeton University (2011). [60] Michael P Barnett ↻, molecular integrals, software, phototypesetting, cognition,[61] later in industry, Columbia U. and CUNY. Louis Burnelle‡, molecular calculations, later professor of chemistry, New York University. Earl Callen † Fernando J. Corbat †, began molecular calculations in the SSMTG; later a pioneer of time sharing and recipient of the Turing Award. George Coulouris ↻, worked with MPB, later professor of computer science at Queen Mary College, University of London. Imre Cszimadia ‡, molecular calculations (LiH), later professor of chemistry, U. Toronto, ab initio calculations, drug design. Jens Dahl has ‡, molecular calculations, later professor of chemistry, Technical University of Denmark, wrote text of quantum chemistry. [64] Donald E. Ellis ↻†, molecular calculations, later professor of Physics and Astronomy at Northwestern University, real materials. Arthur Freeman †‡, orthogonalized calculations of plane waves, later professor of Physics and Astronomy at Northwestern University[66] Robert P. Futrelle ↻, programming methods,[61] later professor of computer science and information sciences at Northeastern University. Leon Gunther †‡ lattice vibrations in alkali alogends, later professor of physics at Tufts University, focus on condensed matter theory in many areas, including superconductivity and seminal documents on nanoscopic physics and quantum tunneling of magnetization. Malcolm Harrison has ‡, (died 2007) co-developer of POLYATOM, later professor of computer science, New York University. [69] Frank Herman, structure calculations band, joined RCA then IBM Research Laboratories, wrote and 20010 major investigations. [70] David Howarth ‡, solid state, later professor of computer science, Imperial College, University of London. [71] John Iliffe ↻, computer scientist. San-Ichiro San-Ichiro ‡, later professor, Ochinamizu University Arnold Karo ‡, electronic structure of small molecules, later at the Lawrence Livermore Laboratory. C.W. Kern ‡, molecular calculations, later professor of chemistry, Ohio State U., published widely. Ryoichi Kikuchi ‡ Walter H. Kleiner, solid state physics, continued at lincoln laboratory. George F. Koster †, became Chairman of MIT's Physics Degree Committee and wrote two books on solid state physics. Leonard F. Mattheiss †, increased piarnese wave calculations, later at Bell Labs, published about 100 articles. [74] Roy McWeeny ‡, valence theory, later held chairs at several British universities and, since 1982, at the University of Pisa, Italy. Alvin Meckler, first major molecular calculation on Whirlwind (oxygen), later National Security Agency,[75] Donald Merrifield †, molecular calculations (methane), later president of Loyola University in Los Angeles. Jules Moskowitz ‡, molecular calculations (benzene), later President, Department of Chemistry, NYU, published 100 articles. Robert K. Nesbet ‡, molecular calculations, later at IBM Almaden Research Laboratories, published over 200 papers. Robert H. Parmenter, later professor of physics, U. Arizona, crystal properties and superconductivity. Russell M. Pitzer ‡, molecular calculations (ethane), later president of the Department of Chemistry, Ohio State U, over 100 articles. George W. Pratt, Jr. †‡ electrical engineering and CMSE, MIT, solid-state electronics. F.W. Those Jr. plane waves increased, later laser optics. Melvin M. Saffren † Robert Schrieffer wrote the Bachelor's thesis on multiples in heavy atoms, later sharing the BCS Nobel Prize in Superconductivity Theory. Edward Schultz Harold Schweinler Hermann Statz ‡, ferromagnetism, later director of research at Raytheon and 2004 winner IEEE Microwave Pioneer Award,[77] Levente Szasz, atomic structure, became professor of physics at Fordham University, published two books,[78] Brian T. Sutcliffe ‡, co-developer of POLYMATO, later professor of chemistry, University of York. Richard E. Watson has ‡‡, electronic properties of metal atoms, later at Brookhaven, has published over 200 articles. E.B. White † John Wood †, aircraft waves increased using Hartree-Fock methods, at los alamos national laboratory (died 1986), published widely. [80] Notable visitors include Frank Boys, Alex Dalgarno, V. Fano, Anders Framan, Inge Fischer-Hjalmars, Douglas Hartree, Werner Heisenberg, Per-Olov L'wdin, Chaim Pekeris, Ivar Waller and Peter Wohlfarth. Slater's further activities at MIT during this period In 1962 President's Report, Jay Stratton wrote (on p. 17) A faculty committee chaired by Professor John C. Slater assumed primary responsibility for the planning of structures new Materials Center. These include a new Cooperative Computing Laboratory completed this year and equipped with an I.B.M. 709 Computer. [10] The name Center for Materials Science and Engineering Engineering was adopted shortly afterwards. He embodied the ethos of interdepartmental research and teaching that Slater had married throughout his career. The first director was R.A. Smith, former head of the physics division of the Royal Radar Establishment in England. He, Slater and Charles Townes, the Provost, had been in close knowledge since the early years of World War II, working on overlapping topics. [81] The Centre was established, according to Slater's plans. He supported research and teaching in Metallurgy and Materials Science, Electrical Engineering, Physics, Chemistry and Chemical Engineering,[81] and retained MIT as a focal point for work in solid state physics. In 1967, two years after his death, mit's Department of Physics had a very, very small commitment to condensed matter physics because it was so heavily in high-energy physics. [82] In the same year, cmse staff included 55 professors and 179 graduate students. [81] The Center continues to flourish in the 21st century. [4] The Cooperative Computing Laboratory (CCL) was used in its first year by about 400 faculty, students, and staff. These included (1) members of the SSMTG and CCL performing quantum mechanical calculations and nonnumeric applications[61] directed by Slater, Koster, Wood and Barnett, (2) ross, Coons and Mann's computer design team, (3) members of the Nuclear Science Laboratory, (4) Charney and Phillips in theoretical meteorology, and (5) Simpson and Madden in geophysics (since 1964 president's report , p. 336-337). [10] Personal life and death in 1926, he married Helen Frankenfeld. Their three children (Louise Chapin, John Frederick and Clarke Rothwell) followed all academic careers. Slater divorced and in 1954 married Rose Mooney, a physicist and crystallographer, who moved to Florida with him in 1965. [1] [8] At the University of Florida (Gainesville) where the retirement age was 70, Slater was able to enjoy another five years of active research and publication as a research professor in the Quantum Theory Project (QTP). In his 1975 scientific autobiography, he wrote: The Florida Department of Physics was a congenial, with the main emphasis on solid state physics, statistical physics, and related fields. It reminded me of the MIT department in the days when I was head of department there. It was a far cry from the MIT Department of Physics that I was leaving; since then it had literally been captured by nuclear theorists. Slater published until the end of his life: his last paper, published with John Connolly in 1976, was on a new approach to molecular orbital theory. [83] Professor Slater was also a member of Dr. Ravi Sharma's PhD committee (1966, U of Florida Gainesville) and for many of these committees. He and Rose told Ravi that he had his books and research papers when the truck carrying his belongings overturned as he moved from MIT to Gainesville. Slater died on Sanibel Island, Florida in 1976. As As and Councillor Slater's concern for the well-being of others is well illustrated by the following dialogue that Richard Feynman recounts. It took place at the end of his college days at MIT, when he wanted to stay for a Ph.D.[85] When I went to Professor Slater and told him of my intentions he said, 'We're not going to have you here.' I said 'What?' Slater said, 'Why do you think you should go to graduate school at MIT?' Because it's the best science school in the country... 'That's why you should go to some other school. You should find out what the rest of the world is like. So I went to Princeton. ... Slater was right. And I often recommend my students the same way. Find out what the rest of the world is like. The variety is worth it. Summary From Philip Morse's memoirs: He contributed significantly to the beginning of the quantum revolution in physics; was one of the very few American physicists to do so. He has been exceptional in that he has continued to explore atomic, molecular and solid-state physics, while many of his peers have been forced by war, or tempted by novelty, to divert to nuclear mysteries. Last but not least, his lyrics and lectures contributed materially to the rise of the illustrious American generation of physicists of the 1940s and 1950s. [1] The new generation slater launched from the SSMTG and QTP brought knowledge and expertise to the Physics and Chemistry and Computer Science departments, industrial and government laboratories and academy, research and administration. They continued and evolved its methodologies, applying them to a growing variety of topics from atomic energy levels to drug design, and to a number of solids and their properties. Slater learned knowledge and advice, and recognized new trends, provided financial support from his grants, and motivational support by sharing the enthusiasms of the protagonists. In a slight paraphrase of a recent and far-sighted commentary by John Connolly,[86] it can be said that the contributions of John C. Slater and his students to the SSMTG and the Quantum Theory Project laid the foundations for the functional density theory that has become one of the earliest approximations in quantum theory today. Slater's papers were leaked to the American Philosophical Society by his widow Rose Mooney Slater, in 1980 and 1982. In August 2003, Alfred Switendick donated a collection of quarterly reports from the MIT Solid State and Molecular Theory Group (SSMTG), dating from 1951-1965. These are available in several major research libraries. Irving Langmuir Award (1967) American Academy of Achievement Gold Plate Award (1969)[88] National Medal of Science (1970) Books Slater, J. C.; Frank, N. H. (1933). Introduction to theoretical physics. New York: McGraw-Hill. ISBN 978-0-07-058090-9. Slater, J. N. H. Frank (1947). Meccanica. New York: McGraw-Hill. ISBN 978-0-313-24064-5. Slater, J. C.; N. H. Frank (1947). Elettromagnetismo. Elettromagnetismo. York: McGraw-Hill. [89] Slater, J. C. (1950). Microwave electronics. New York: Van Nostrand. Slater, J. C. (1955). Modern physics. New York: McGraw-Hill. Slater, J. C. (1939). Introduction to chemical physics. New York: Dover. ISBN 978-0-486-62562-1. 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