

Friedrich Hund (4 February 1896 – 31 March 1997)

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Friedrich Hund



Friedrich Hund, Göttingen, in the 1920s

Born	4 February 1896 Karlsruhe
Died	31 March 1997 (aged 101) Karlsruhe
Nationality	German
Fields	Physics
Doctoral advisor	Max Born
Doctoral students	Harry Lehmann Jürgen Schnakenberg Edward Teller

Notable awards[Max Planck Medal](#) (1943)

Friedrich Hermann Hund (4 February 1896 – 31 March 1997) was a [German physicist](#) from [Karlsruhe](#) known for his work on atoms and molecules.

Hund worked at the Universities of [Rostock](#), [Leipzig](#), [Jena](#), [Frankfurt am Main](#), and [Göttingen](#).

Hund worked with such prestigious physicists as [Schrödinger](#), [Dirac](#), [Heisenberg](#), [Max Born](#), and [Walter Bothe](#). At that time, he was Born's assistant, working with quantum interpretation of band spectra of diatomic molecules.



 [Robert Mulliken](#) and Friedrich Hund, Chicago, 1929

After his studies of mathematics, physics, and geography in Marburg and Göttingen, he worked as a private lecturer for theoretical physics in Göttingen (1925), professor in Rostock (1927), Leipzig (1929), Jena (1946), Frankfurt/Main (1951) and from 1957 again in Göttingen. Additionally, he stayed in Copenhagen (1926) with [Niels Bohr](#) and lectured on the atom at [Harvard University](#) (1928). He published more than 250 papers and essays in total. Hund made pivotal contributions to quantum theory - especially concerning the structure of the atom and of molecular spectra.

In fact, [Robert S. Mulliken](#), who was awarded the 1966 Nobel Prize in chemistry for molecular orbital theory, always proclaimed the great influence Hund's work had on his own and that he would have gladly shared the Nobel prize with Hund. In recognition of the importance of Hund's contributions, MO theory is often referred to as the Hund-Mulliken [MO theory](#). [Hund's rule of maximum multiplicity](#) is another eponym and, in 1926, Hund discovered the so-called tunnel effect or [quantum tunnelling](#).

The [Hund's cases](#), which are particular regimes in molecular [angular momentum coupling](#), and [Hund's rules](#), which govern [electron configurations](#), are important in [spectroscopy](#) and [quantum chemistry](#). In chemistry, the first rule, [Hund's rule of maximum multiplicity](#), is especially important and is often referred to as simply Hund's Rule.

On the occasion of his 100th birthday, the book: Friedrich Hund: Geschichte der physikalischen Begriffe [History of Physical Concepts] (Heidelberg, Berlin, Oxford), Spektrum, Akademie Verlag 1996, [ISBN 3-8274-0083-X](#) was published. A review was also written by [Werner Kutzelnigg](#).^[1]

In addition to the many honors bestowed upon him, Friedrich Hund became an honorary citizen of Jena/Saale, and a street in Jena was named after him. In June 2004, a part of a new building of the Physics Department in Göttingen was given the address Friedrich-Hund-Platz 1. The same name was chosen for the Institute for Theoretical Physics at the University of Göttingen.

He was a member of the [International Academy of Quantum Molecular Science](#).

Publications[[edit](#)]

- *Versuch einer Deutung der großen Durchlässigkeit einiger Edelgase für sehr langsame Elektronen*, Dissertation, Universität Göttingen 1923
- *Linienspektren und periodisches System der Elemente*, Habil.Schrift, Universität Göttingen, Springer 1927^{[2][3]}
- *Allgemeine Quantenmechanik des Atom- und Molekelbaues*, in Handbuch der Physik, Band 24/1, 2nd edn., pp. 561-694 (1933)
- *Materie als Feld*, Berlin, Springer 1954
- *Einführung in die Theoretische Physik*, 5 vols. 1944-51, Meyers Kleine Handbücher, Leipzig, Bibliographisches Institut, 1945, 1950/51 (vol. 1: Mechanik, vol. 2: Theorie der Elektrizität und des Magnetismus, vol. 3: Optik, vol. 4: Theorie der Wärme, vol. 5: Atom- und Quantentheorie)
- *Theoretische Physik*, 3 vols., Stuttgart Teubner, zuerst 1956-57, vol. 1: Mechanik, 5th edn. 1962, vol. 2: Theorie der Elektrizität und des Lichts, Relativitätstheorie, 4th edn. 1963, vol. 3: Wärmelehre und Quantentheorie, 3rd edn. 1966
- *Theorie des Aufbaues der Materie*, Stuttgart, Teubner 1961
- *Grundbegriffe der Physik*, Mannheim, Bibliographisches Institut 1969, 2nd edn. 1979
- *Geschichte der Quantentheorie*, 1967, 2nd edn., Mannheim, Bibliographisches Institut 1975, 3rd edn. 1984; Eng. trans. 1974^[4]
- *Quantenmechanik der Atome*, in Handbuch der Physik/Encyclopedia of Physics, Band XXXVI, Berlin, Springer 1956
- *Die Geschichte der Göttinger Physik*, Vandenhoeck und Ruprecht 1987 (Göttinger Universitätsreden)
- *Geschichte der physikalischen Begriffe*, 1968, 2nd edn. (2 vols.), Mannheim, Bibliographisches Institut 1978 (vol. 1: Die Entstehung des mechanischen Naturbildes, vol. 2: Die Wege zum heutigen Naturbild), Spektrum Verlag 1996
- *Göttingen, Kopenhagen, Leipzig im Rückblick*, in [Fritz Bopp](#) (ed.) *Werner Heisenberg und die Physik unserer Zeit*, Braunschweig 1961

- See also [Verzeichnis der Schriften Friedrich Hund \(1896-1997\)](#) with about 300 entries

References[[edit](#)]

1. [^ Kutzelnigg, Werner](#) (1996). "Friedrich Hund and Chemistry". *Angewandte Chemie* **35**: 573–586. doi:10.1002/anie.199605721.
2. [^ Uhler, H. S.](#) (1928). "Review: *Linienspektren und periodisches System der Elemente*, by [Friedrich Hund](#)". *Bull. Amer. Math. Soc.* **34** (5): 673.
3. [^ Hoyt, F. C.](#) (1927). "Review: *Linienspektren und periodisches System der Elemente*, by [Friedrich Hund](#)". *Astrophysical Journal* **65**: 321–322. Bibcode:1927ApJ...65..321.. doi:10.1086/143057.
4. [^ Ellison, Frank O.](#) (1975). "Review: *The History of Quantum Theory*, by Friedrich Hund, trans. by Gordon Reece". *J. Chem. Educ.* **52** (12): A560. Bibcode:1975JChEd..52..560E. doi:10.1021/ed052pA560.1.