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John Robert Schrieffer Biography

John Robert Schrieffer is an American physicist noted for his contributions in developing the BCS theory. He was awarded the Nobel Prize Physics. This biography profiles his childhood, life, research career, achievements and timeline.

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Quick Facts

Birthday: May 31 (//Www.thefamouspeople.com/May-31st.php), 1931 (//Www.thefamouspeople.com/Born-1931.Php)

Nationality: American (//Www.thefamouspeople.com/United\_states.php)

Famous: Physicists (//Www.thefamouspeople.com/Physicists.php)

American Men (//Www.thefamouspeople.com/United-States-Men.php)

Sun Sign: Gemini (//Www.thefamouspeople.com/Gemini.php)

Age: 87 Years (//Www.thefamouspeople.com/87-Year.php), 87 Year Old Males (//Www.thefamouspeople.com/87-Year-Males.php)

Born In: Oak Park, Illinois, USA

Famous As: Physicist

Family:

Spouse/Ex-: Anne Grete Thomsen

Father: John H. Schrieffer

Mother: Louise Anderson

Children: Bolette, Paul, Regina

City, States, Provinces & Districts: Illinois (//Www.thefamouspeople.com/Illinois.php)

Notable Alumni: University Of Illinois At Urbana-Champaign

More Facts



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HowStuffWorks

John Robert Schrieffer is an American physicist noted for his contributions in developing the BCS theory, along with fellow American physicists John Bardeen and Leon N Cooper. It was their first successful and widely accepted superconductivity theory. Their scientific contribution of the trio won them the 'Nobel Prize in Physics' in 1972. He was still a graduate level student under John Bardeen at the University of Illinois when he worked with Bardeen and Cooper to develop, elucidate and publish the BCS theory of superconductivity, the acronym of which was formed by combining the initial letters of surnames of its developers namely Bardeen, Cooper and Schrieffer in that order. He aided in explaining the reason behind metals losing their electrical resistance when temperature is quite low. He also contributed in developing another theory that is related to high temperature superconductivity. Over decades he remained an academician imparting education at several universities at different

point of time. These include 'University of Chicago'; 'University of Pennsylvania', Philadelphia; 'University of Illinois'; 'University of California', Santa Barbara; 'Florida State University'; and 'Cornell University'. He became Andrew D. White Professor-at-Large at 'Cornell University' and Mary Amanda Wood professor in physics at the 'University of Pennsylvania, Philadelphia. He received several awards and recognitions including the 'Guggenheim Fellowship', the 'Comstock Prize in Physics' (1968) and the 'National Medal of Science' (1983) among others. Amidst all the success and accomplishments he had to face a sentence of two years for vehicular manslaughter when he lost control while driving and crashed a vehicle resulting in killing its driver and injuring seven more people. He served his sentence at the 'Richard J. Donovan Correctional Facility' located at the Rock Mountain close to San Diego, California.

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## Childhood & Early Life

- He was born on May 31, 1931, in Oak Park, Illinois, to John H. Schrieffer and Louise Anderson.
- His family relocated to Manhasset, New York, in 1940.
- In 1947 the family again shifted to Florida, where his father embarked into the citrus industry and became an orange grove owner.
- Schrieffer attended the 'Eustis High School' in Eustis, Florida, and completed his graduation in 1949.
- He then headed north to Massachusetts and enrolled at the 'Massachusetts Institute of Technology' ('MIT') to study electrical engineering. However after majoring in electrical engineering for two years, he switched to physics in the third year. In 1953 he obtained BS in Physics from the institute submitting his thesis on multiplets in heavy atoms under the guidance of distinguished American physicist John C. Slater.

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## Career

- His interest in solid state physics landed him at Illinois to pursue graduate studies at the 'University of Illinois' at Urbana-Champaign. Soon he was inducted as research assistant in the lab of John Bardeen.
- While at the lab of Bardeen he initially concentrated to work on a theoretical problem regarding electrical conduction on semiconductor surfaces. He then went on to apply such theory to various surface problems for about a year.
- He got involved in developing the theory of superconductivity with Bardeen and Cooper in 1956, during the third year of his graduate studies. The same year Cooper, who was also working as an assistant in the lab of Bardeen, discovered that electrons, which usually behave repulsively with each other, could however be paired when temperature conditions are extremely low. This concept is known as Cooper pairs. As temperature increases well above absolute zero the Cooper pairs breaks.
- Following this discovery of Cooper, Schrieffer embarked on to find a mathematical description of behaviour of the Cooper pairs. His mathematical breakthrough came in early 1957 when he succeeded in developing the essential equations. The 'BCS' theory was completed and announced later that year.
- In 1957 he earned his PhD from the 'University of Illinois' at Urbana-Champaign. His doctoral thesis included his theoretical work on superconductivity.
- During 1957-58 he remained a 'National Science Foundation' fellow at the 'University of Birmingham' in England. In 1958 he remained a scholar at the 'Niels Bohr Institute', 'University of Copenhagen', in Copenhagen, Denmark. He





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