



## Charles H. Townes

### Who invented the laser?

- [Arthur Schawlow biography](#)
- [Charles Townes biography](#)
- [Bell Labs Historical Contributions](#)

**1915** - Born in Greenville, S.C.

**1935** - Receives a B.A. and a B.S. from Furman University.

**1937** - Receives an M.A. from Duke University.



**1939** - Joins Bell Labs on West Street, N.Y.C., after receiving his Ph.D. degree in physics from the California Institute of Technology.

### What is a laser?

### Why are lasers important?

**1948** - Becomes an associate professor of physics at Columbia University.

### What's happening today?

- [Lucent Threw a Party and Everyone Came](#)
- [Bell Labs and Lucent's Contributions to Laser Research](#)

**1949** - Meets Arthur L. Schawlow, who comes to Columbia University on a fellowship and works as a research assistant to him.

**1950** - Becomes a professor of physics at Columbia and executive director of the Columbia Radiation Laboratory.

**1951** - Conceives if the idea of a maser (similar ideas occur independently to A. Prokhorov and N. Basov in Moscow and J. Weber of the University of Maryland).

### Where can I learn more?

**1952** - Becomes chairman of Columbia's Physics Department.

**1953** - Builds the first maser with J. P. Gordon and H. J. Zeiger at Columbia.

**1955** - Co-authors the book *Microwave Spectroscopy* with Schawlow.

**1956** - Serves as a Bell Labs consultant in the field of solid-state masers.

**1957** - While serving as a consultant to Bell Labs, begins working with Schawlow on [the principles of a device](#) -- the laser -- that could operate at wavelengths a thousand times shorter than the maser.

**1958** - Proposes with Schawlow in a paper published in the December *Physical Review* that the principles of the maser



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could be extended to the optical regions of the spectrum using an incoherent pump source.

**1959-61** - Becomes vice-president and director of research for the Institute for Defense Analysis in Washington, D.C.

**1960** - Receives with Schawlow [a patent for the invention of the laser](#). The first working laser is built by Theodore Maiman at Hughes Aircraft Company using ruby at 0.69 microns.

**1964** -- Shares [the Nobel Prize in Physics](#) with A. Prokhorov and N. Basov of the Lebedev Institute in Moscow for "fundamental work in the field of quantum electronics which has led to the construction of oscillators and amplifiers based on the maser-laser principle."

**1966** - Becomes Institute Professor at MIT.

**1967** - Becomes University Professor of Physics at the University of California at Berkeley.

**1986** - Becomes University Professor of Physics, Emeritus, at the University of California at Berkeley.



**1998** - Joins [Schawlow](#) and scientists from Bell Labs and around the world to celebrate the 40th anniversary of the laser at the [CLEO conference](#) in San Francisco.