

# Félix Savart Biography

## Félix Savart

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# Biography

Félix Savart was an experimental physicist who studied **acoustics**, vibration, and **elasticity**. Savart extended German physicist Ernst Chladni's (1756-1824) studies with vibrating plates of sand, and developed new ways of studying the elasticity of materials. With the French physicist, Jean Baptiste Biot, Savart demonstrated that the magnetic field produced by a current in a wire is inversely proportional to the distance from the wire.

Born in Mézières, France, in 1791, Savart's father, Gérard Savart, was an engineer at the military school in Metz. Savart first studied medicine at the military hospital at Metz, receiving his medical degree from the University of Strasbourg in 1816. Savart's real interests, however, lay in physics. His brother Nicolas, an engineer who had studied at the École Polytechnique, also began to work on the physics of vibration.

Savart moved to Paris where he built his first experimental violin in 1817. Two years later, he delivered a paper on the physics of the violin to the Paris Academy of Sciences. Savart examined how vibrations were transmitted from the strings to the body of the violin. He used Chladni's vibrating sand patterns to study the nodal lines produced by the vibrations of the strings. In an attempt to improve the tone, he built a trapezoid-shaped violin with rectangular holes.

Biot was impressed with Savart's work and found him a position teaching physics in Paris. In 1820, Savart and Biot began measuring the magnetic fields produced by a current. These experiments resulted in the Biot-Savart Law of **Electrodynamics**. Savart also continued his studies on vibrations, building on Chladni's experiments with vibrating plates. He developed methods for studying the vibrations of air, membranes, solids, and various other materials. Savart also studied the vocalizations of animals and humans. He determined the lower **frequency** limits of **hearing**, using a toothed wheel that produced tones of given frequencies. Most of his 27 scientific papers were published in the *Annales de Chimie et de Physique*.

Savart became a member of the Paris Academy in 1827. The following year he was appointed professor of experimental physics at the Collège de France. Savart died in Paris at the age of 49.