

Special issue:

Centennial of the Michelson–Morley experiment

A century ago Albert A. Michelson, a young physicist at the Case School of Applied Science in Cleveland, Ohio, and Edward Morley, a physical chemist at neighboring Western Reserve University, performed an experiment to measure the speed of the Earth through the “luminiferous æther”—the medium whose oscillations were supposed to give rise to light, among other effects. The experiment was an outgrowth of work involving optical interferometry, which was to be the focus of much of Michelson’s career.

Michelson is celebrated as one of the greatest experimental physicists of his time, and the 1887 experiment is commonly hailed as the *experimentum crucis* that made necessary a revolution in our understanding of space and time. This special issue serves both to commemorate the experiment itself and to assess its impact on subsequent events. On 30–31 October the now combined Case Western Reserve University is celebrating the anniversary with a symposium on modern physics in America, and other events.

In the article on page 24 Loyd Swenson discusses Michelson’s scientific career, focusing particularly on the instruments Michelson built to perform his experiments. On page 50 Albert Moyer describes the events of 1887 in Michelson’s life that affected his work and his collaboration with Morley. Recently discovered letters of Albert Einstein shed some light on the origins of the special theory of relativity; John Stachel discusses these findings on page 45. J. David Jackson discusses, on page 34, the impact special relativity has had on theoretical physics (it is hard to imagine what physics would be like without). Modern experimental techniques have considerably narrowed the limits on how different a theory can be from special relativity and still have a chance for validity; Clifford Will discusses the current status of experimental tests of relativity on page 69.



Albert Abraham Michelson at the University of Chicago, at the height of his career. This reproduction of a portrait by Ralph Clarkson was prepared for the Michelson Museum in China Lake, California. The original of the portrait is at the University of Chicago, where it first hung in the Ryerson Laboratory that Michelson established there. (Photo courtesy of China Lake Naval Weapons Center.)