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RESEARCH ANTIMATTER ALSO FOLLOWS THE LAWS OF QUANTUM MECHANICS

The classic double-slit experiment has been completed for the first time with single antielectrons: thus it was directly proved that the wave-particle duality also applies to antimatter and, in particular,

to the positron, the electron's antiparticle. This character of antimatter was identified by observing the interference of antimatter waves with single positrons for the first time, and confirms that the laws of quantum mechanics also hold true for antimatter.

This version of the double-slit interference experiment with single particles of antimatter was completed for the first time with photons by Thomas Young, then proposed, at the conceptual level, with single particles by Albert Einstein, and then completed with single electrons by Gian Franco Missiroli, Pier Giorgio Merli and Giulio Pozzi and published in 1976.

Researchers at the Polytechnic of Milan, INFN, the University of Milan, and the Albert Einstein Centre (AEC) for Fundamental Physics and the Laboratory for High Energy Physics (LHEP) of the University of Bern, have, in fact, succeeded in the sophisticated endeavour of completing the experiment using single positrons. The experiment is based on the techniques of interferometry: when antimatter "waves", generated by a single positron, constructively interfere, they collapse and localise in a single point, behaving like a single particle. The study was published on 3 May in <u>Science Advances.</u>