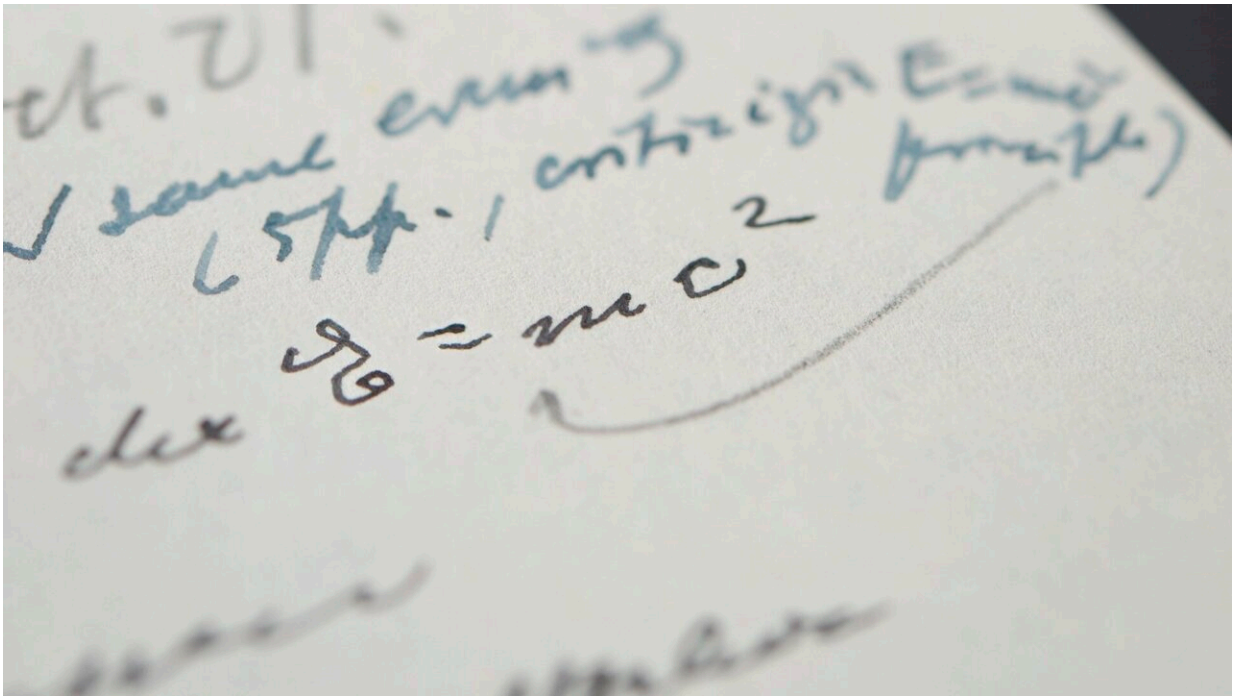
# Handwritten example of famous Einstein equation gets $1.2M

May 21 2021




In this undated photograph, provided by Boston-based RR Auction, shows a letter written by Albert Einstein, in which he wrote out his famous "E = mc2" equation, that sold at auction for more than $1.2 million. Archivists at the Einstein Papers Project at the California Institute of Technology and the Hebrew University of Jerusalem say there are only three other known examples of Einstein writing the world-changing equation in his own hand. Credit: Nikki Brickett/RR Auction via AP

A letter written by Albert Einstein in which he writes out his famous E = $mc^2$ equation has sold at auction for more than $1.2 million, about three times more than it was expected to get, Boston-based RR Auction said Friday.

Archivists at the Einstein Papers Project at the California Institute of Technology and the Hebrew University of Jerusalem say there are only three other known examples of Einstein writing the world-changing equation in his own hand.

This fourth example, the only one in a private collection, only became public recently, according to RR Auction, which had expected it to sell for about $400,000.

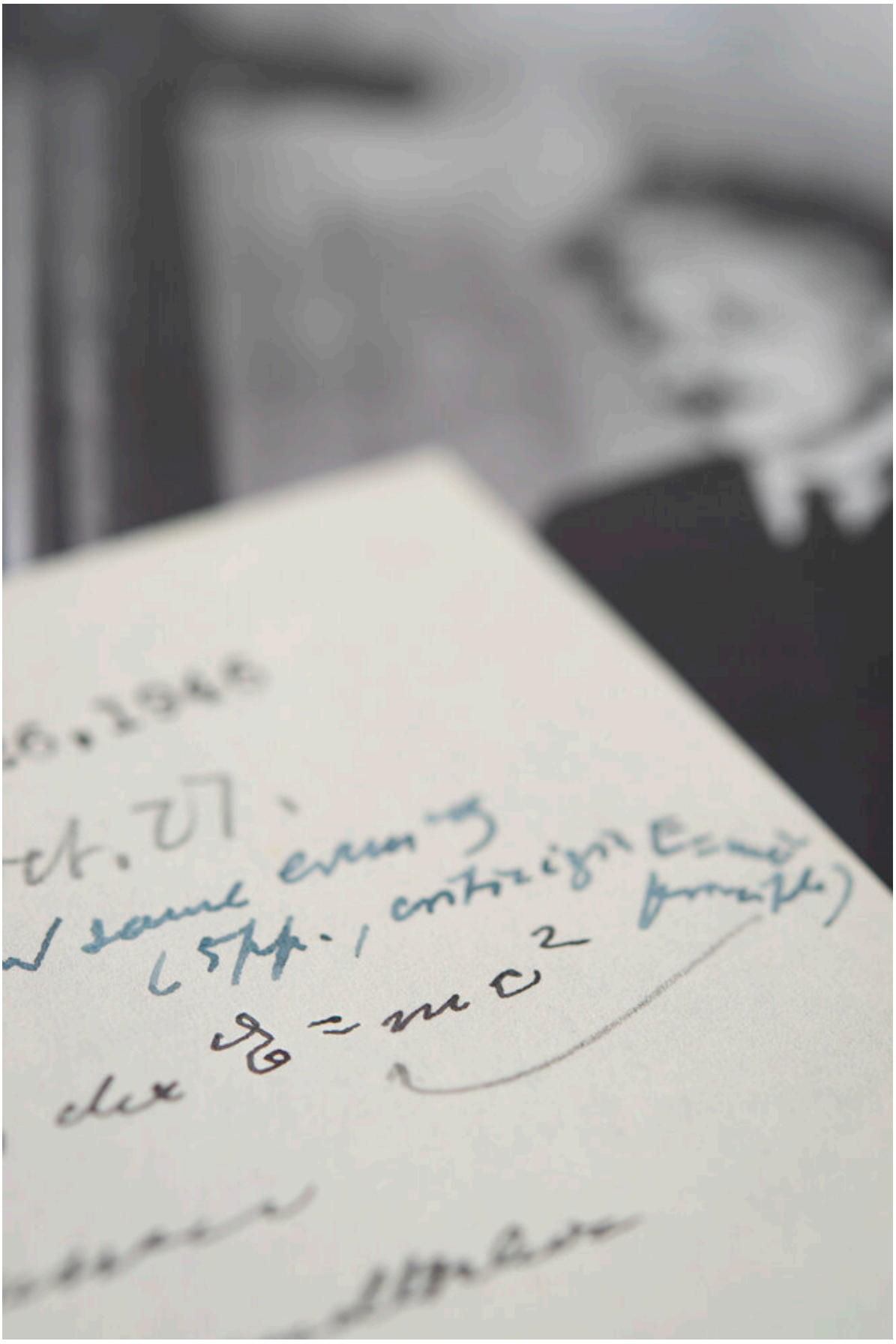
"It's an important letter from both a holographic and a physics point of view," Bobby Livingston, executive vice president at RR Auction said, calling the equation the most famous in the world.

The equation—energy equals mass times the speed of light squared—changed physics by demonstrating that time was not absolute and that mass and energy were equivalent.

The one-page handwritten letter in German to Polish American physicist Ludwik Silberstein is dated Oct. 26, 1946.

Silberstein was a well-known critic and challenger to some of Einstein's theories.

"Your question can be answered from the E = mc2 formula, without any erudition," Einstein wrote in the letter written on Princeton University letterhead, according to a translation provided by RR Auction.


$E = mc^2$

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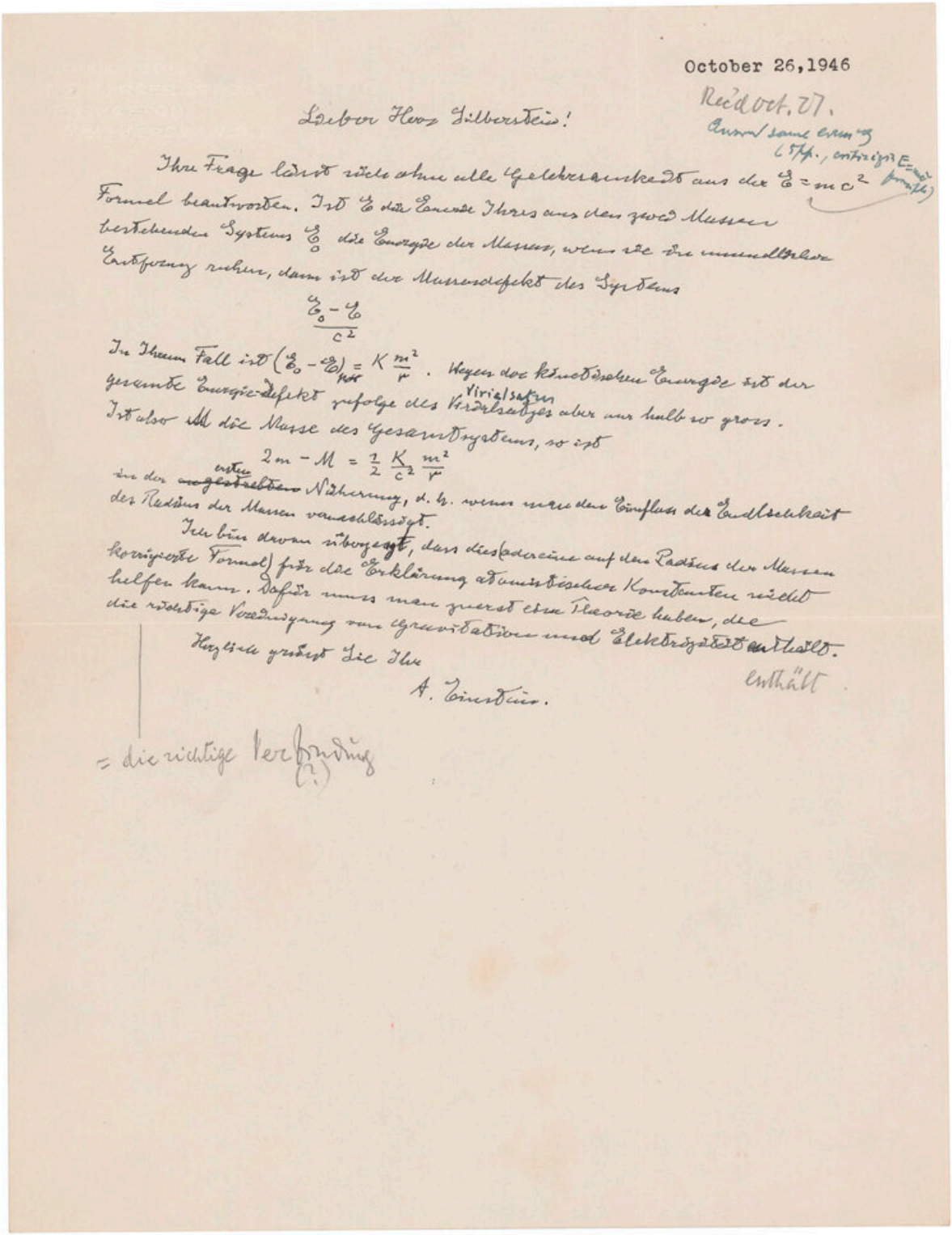

October 26, 1946

Rec'd Oct. 27.

Lieber Herr Silberstein!

Ihre Frage lässt sich ohne alle Gelehrsamkeit aus der $\mathfrak{E} = mc^2$ Formel beantworten. Ist $\mathfrak{E}$ die Energie Ihres aus den zwei Massen bestehenden Systems $\mathfrak{E}_0$ die Energie der Massen, wenn sie in unendlicher Entfernung ruhen, dann ist der Massendefekt des Systems

$$\frac{\mathfrak{E}_0 - \mathfrak{E}}{c^2}$$

In Ihrem Fall ist $(\mathfrak{E}_0 - \mathfrak{E}) = K\frac{m^2}{r}$. Wegen der kinetischen Energie ist der gesamte Energiedefekt infolge des Virialsatzes aber nur halb so gross. Ist also M die Masse des Gesamtsystems, so ist

$$2m - M = \frac{1}{2}\frac{K}{c^2}\frac{m^2}{r}$$

in der ~~angestrebten~~ ersten Näherung, d. h. wenn man den Einfluss der Endlichkeit des Radius der Massen vernachlässigt.

Ich bin davon überzeugt, dass dies dereinst auf den Radius der Massen korrigierte Formel für die Erklärung atomistischer Konstanten nicht helfen kann. Dafür muss man zuerst eine Theorie haben, die die richtige Verbindung von Gravitation und Elektrizität enthält.

Herzlich grüsst Sie Ihr

A. Einstein.

= die richtige Verbindung (?)

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The letter was part of Silberstein's personal archives, which were sold by his descendants.

The buyer was identified by RR only as an anonymous document collector.

The rarity of the letter set off a bidding war, Livingston said.

Five parties were bidding aggressively at first, but once the price reached about $700,000, it became a two-party contest, he said.

The auction began May 13 and concluded Thursday.