

THE FAILURE OF EINSTEIN'S $E=MC^2$

CHAN RASJID KAH CHEW

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[English with Chinese translation]

1. OPEN LETTER TO THE WORLD PHYSICS COMMUNITY

Dear scientists,

For almost a hundred years, Einstein's formula $E = mc^2$ (the famous energy mass equivalent equation) has been the cardinal equation of physics as it introduced the concept of total energy of matter; all dynamics involves energy of particles and matter. The author has discovered very recently (April 2016) that the formula $E = mc^2$ is invalid; energy is fictitious in the formula. The proof is simple and involves no high mathematics. Any good high school students taking physics as a subject could easily come to a definite understanding of the analysis and decides for himself whether the author's claim is correct; there is no need to rely on the words of any physics professor to know whether the formula $E = mc^2$ is valid or invalid. The author has the relevant paper in his website:

"The Relativistic Mechanics of $E=mc^2$ Fails",
<http://www.emc2fails.com>

The short paragraphs below are sufficient to convince any physics students that the formula $E = mc^2$ is invalid.

The formula for kinetic energy in classical Newtonian mechanics is: $KE = \frac{1}{2}mv^2$. This formula is derived from the application of Newton's second law together with the definition of momentum p as: $p = mv$, where m =mass of particle with velocity v . Energy in classical Newtonian mechanics is based on the definition of *work(energy) = force \times distance*. Newton's second law is:

Force is proportional to the rate of change of momentum

It gives force F as: $F = \frac{d}{dt}(mv) = m \times \frac{dv}{dt} = ma$. This is the well known definition of force as mass times distance: $F = ma$. The unit for force in the SI system is the newton (symbol N); with *work = force \times distance*, the unit for energy is the Joule (symbol J).

On the other hand, the formula $E = mc^2$ is derived from Einstein's special theory of relativity together with a new relativistic definition of momentum p as: $p = \frac{mv}{\sqrt{1-v^2/c^2}}$, where m = rest mass, c =constant speed of light. With a new definition of momentum, force in special relativity would be different from the classical mechanics definition of $F = ma$; it is now:

$$F = \frac{dp}{dt} = \frac{d}{dt} \left(\frac{mv}{\sqrt{1-v^2/c^2}} \right) \quad (1)$$

As any physics students can see, equation (1) is different from the rather simple $F = ma$. $F = ma$ is the basis of the SI definition for the unit of force, the newton N. There is no way equation (1) may be used in any manner to define a unit of force. The truth is that special relativity has no real unit for force; the physics community assumes equation (1) too evaluates force also in the same units as with classical Newtonian mechanics - it does not. Only in classical Newtonian mechanics that the SI unit of force, the newton N, may be used. The relativistic force as defined in equation (1) evaluates to only a real number with no association with any real unit of force. As force does not have a real unit, so does work and energy in special relativity have no real units. Energy in special relativity is only fictitious. The formula $E = mc^2$ is derived directly from equation (1) and therefore energy in the formula, too, is fictitious (the only exception may be when a particle is at rest where $E = mc^2$ may apply).

All figures of energy in relativistic physics, including high energy particle physics, is based on the fundamental formula $E = mc^2$; when energy is fictitious, all of particle physics breaks down. The European Organization for Nuclear Research, CERN, that operates the Large Hadron Collider (LHC) has purportedly accelerated protons to levels of energy as high as 7 TeV (tera electron-volt, 10^{12}). As the energy was computed from the formula $E = mc^2$, the figure was just a fictitious value. The only kinetic energy formula that computes energy in real units is the simple classical formula: $KE = \frac{1}{2}mv^2$. With this formula, the proton's energy within the LHC would only be about 470 MeV (10^6); the CERN's reported figure being overstated by a factor of 15,000.

All of high energy particle physics fails.

2. 对物理学界的公开信：爱因斯坦的 E=mc2 物理学无效。

亲爱的科学家们，

近一百年来，爱因斯坦的公式 $E = mc^2$ (著名的能量质量等效方程) 一直是物理学的主要方程，因为它引入了物质总能量的概念；所有动力学都涉及粒子和物质的能量。作者最近发现 (2016年4月)，公式 $E = mc^2$ 无效；能量在公式中是虚构的。证明很简单，不涉及高数

学。任何以物理学为主题的高中生，都可以轻而易举地了解证据，如果作者的说法正确，可以自己决定；没有必要依赖任何物理教授的话来知道公式 $E=mc^2$ 是有效还是无效。作者在他的网站上有相关文章：

$E = mc^2$ 的相对论力学失败，

<http://www.emc2fails.com>

下面的短段足以说服任何物理学生的公式 $E = mc^2$ 无效。

经典牛顿力学中的动能公式为： $KE = \frac{1}{2}mv^2$ ；该公式来自牛顿第二定律的应用以及动量 p 的定义： $p = mv$ ；其中 m =具有速度 v 的粒子质量。经典牛顿力学中的能量基于以下定义：工作（能量）=力 \times 距离。牛顿的第二定律是：力量与动量变化率成比例。它给出力 F ： $F = \frac{d}{dt}(mv) = m \times \frac{dv}{dt} = ma$ ；这是众所周知的作为质量乘积距离的力的定义： $F = ma$ 。SI系统中的力单位是牛顿（符号N）；与工作=力 \times 距离，能量的单位是焦耳（符号J）。

另一方面，公式 $E = mc^2$ 是从爱因斯坦的特殊相对论得出的，动量的新的相对论定义如下： $p = mv/\sqrt{1 - v^2/c^2}$ ；其中 m =静止质量， c =光的恒定速度。有了动量的新定义，狭义相对论的力量与 $F = ma$ 的经典定义不同；就是现在：

$$F = \frac{dp}{dt} = \frac{d}{dt}\left(\frac{mv}{\sqrt{1 - v^2/c^2}}\right) \quad (2)$$

任何物理学学生都可以看到，方程（2）不同于相当简单的 $F = ma$ 。 $F = ma$ 是 SI 系统对力的定义的基础，牛顿N.无法以任何方式使用方程(2) 来定义力单位。事实是狭义相对论没有真正的力量单位；物理学学界只假设方程（2）也是在牛顿力学的相同经典单位中评估力 - 它不是。只有在古典力学中，可以使用力单位牛顿N。方程

（2）中定义的相对论力量仅评估与任何实际的力单位无关的实数。由于力量没有真正的单位，在狭义相对论中的工作和能量也没有真正的单位。狭义相对论的能量只是虚构的。由公式 $E=mc^2$ 直接从等式(2) 得出，公式中的能量也是虚构的（唯一的例外可能是当粒子处于静止时， $E = mc^2$ 可能适用）。

所有能量数字在相对论物理学中，包括高能粒子物理学，都是基于公式 $E = mc^2$ ；当能量是虚构的，所有的粒子物理学都会崩溃。欧洲核研究组织（CERN）运营大型强子对撞机（LHC），据称将质子加速至高达7 TeV（tera电子伏特， 10^{12} ）的能量水平。由于能量是从公式 $E = mc^2$ 计算的，这个数字只是一个虚构的值。计算实际能量的唯一动能公式是简单的经典公式： $KE = \frac{1}{2}mv^2$ 。使用这个公式，LHC内的质子能量将仅为470MeV（ 10^6 ）；CERN的报告数字被夸大了15000 倍。

所有高能粒子物理是失败的。

作者:陈家钊拉希德.

E-mail address: chanrasjid@emc2fails.com

URL: <http://www.emc2fails.com>

SINGAPORE