Is Einstein's E=mc^2, Conceptually Applicable to Energy Emitted in Chemical Reactions?

Ajay Sharma

Email: physicsajay@rediffmail.com

Fundamental Physics Society,
His Mercy Campus, Post Box 107, GPO Shimla
171001, HP, INDIA

Before applying any equation in any phenomena, we have to see the conditions and assumptions under which the EQAUTION IS derived. What have been the CONDITIONS and ASSUMPTIONS in the derivation of an equation? It is very important to know these before applying the equation. **For example Hook's law is only obeyed within elastic limits and Ohm's Law is applicable under certain conditions.**

Part I

Origin of E=mc2 in Einstein's Sep. 27 1905 Paper

A. Einstein, *Annalen der Physik*   **18**   (1905) 639-641.
DOES THE INERTIA OF A BODY DEPEND UPON ITS ENERGY-CONTENT?

Einstein's 27 Sep. 1905 paper is available at
http://www.fourmilab.ch/etexts/einstein/E_mc2/www/

What Einstein did in the paper ?

Einstein considered a body at rest emitting light energy. Einstein measured the magnitude of light energy in a moving system. And then he derived a relation between ENERGY EMITTED (L) and DECREASE IN MASS (Δm) of the body.

The basic equation Einstein used is

$$\ell^* = \ell\{1 - v \cos \varphi/c \} /\sqrt{[1 - v^2 /c^2]} \tag{1}$$

ℓ^* is light energy measured in the moving in frame and ℓ is the energy measured in the rest frame.

Einstein gave eq.(1) in his June 1905 paper, known as Special Theory of Relativity and called eq.(1)

the Doppler principle for any velocities whatever. The Link for the paper, Special Theory of

Relativity is:

http://www.fourmilab.ch/etexts/einstein/specrel/www/

Then Einstein did calculations under classical conditions (v<<c , applied Binomial Theorem) and obtained equation

$L = (M_b - M_a)c^2 = \Delta mc^2$

$L = $ (Mass of body before emission –Mass of energy after emission) $c^2 = \Delta mc^2$ (2)

Conceptually, mathematically, scientifically, eq.(2) is meant ONLY for measurements of MASS DECREASE when LIGHT ENERGY is emitted. The reason is that eq.(1) DESCRIBES only Light Energy.

Part II

In this case Einstein SPECULATED, that

' whatever is true for Light Energy , is true for every energy'

Thus, Einstein replaced term L (light energy) by term E (every energy) without giving any conceptual reasoning thus ,

$E = $ (Mass of body before emission –Mass of energy after emission) $c^2 = \Delta mc^2$

Here E stands for every energy e.g.

(i)   sound energy,

(ii)   heat energy,

(iii)   chemical energy,

(iv)   nuclear energy,

(v)   magnetic energy,

(vi)   electrical energy,

(vii)   energy emitted in form of invisible radiations,

(viii)   energy emitted in cosmological and astrophysical phenomena

(ix)   energies co-existing in various forms etc. etc. etc.

Now Einstein's this SPECULATION implies that eq.(1) i.e.

$\ell^* = \ell\{1 - v \cos \varphi/c \} /\sqrt{[1 - v^2/c^2]}$ (1)

is valid **for all these energies**. BUT EQ.(1) IS DERIVED FOR LIGHT ENERGY ONLY.

Einstein did not mention these reactions at all in his paper .But he generalized eq.(2) for all these energies.

PartII

Consider simple chemical reactions i.e. combustion of wood of paper.

(i)   Should energy emitted on annihilation of mass, be measured by $E=mc^2$, when its original form $L =mc^2$ is meant CONCEPTUALLY for Light energy?

(ii)   Should for all such cases Light Energy Mass inter conversion be derived by specifically by other methods ?

MY WORK IS ABSOLUTELY CORRECT, FLAWLESS.
Author/Editors/Publishers/Referees is all correct

Still there ANYONE is welcome to contradict the work in Physics Essays giving the facts e.g.
What is Einstein's Sep 1905 paper ?
What are conditions under which it is derived?
Under what conditions experimentally does it hold good?
How to generalize it under all conditions?
What is Ajay Sharma's Interpretation?
How Ajay Sharma's paper is different from Einstein's Sep 1905 paper
How Ajay Sharma's interpretation is incorrect (if it)?
What are the correct interpretations?

There are thousands of link to my work on the internet. All the references are given below for the purpose.

REFERENCES

References of Einstein's work

.

A. Einstein, *Annalen der Physik* **18** (1905) 639-641.
. DOES THE INERTIA OF A BODY DEPEND
UPON ITS ENERGY-CONTENT?
 Weblink is
 Einstein's 27 Sep 1905 paper available at
http://www.fourmilab.ch/etexts/einstein/E_mc2/www/

References of Ajay Sharma's work

 My work is available at
 A. Sharma, Physics Essays, **17** (2004) 195-222.
 "The Origin of Generalized Mass-Energy Equation $\Delta E = Ac^2 \Delta M$; and its applications   in General physics and Cosmology".
 http://www.burningbrain.org/pdf/ajaysharma_einstein.pdf

International Conferences
It has been accepted for presentation over 55 conferences all over the world
1. Sharma, A. presented in 19th International Conference on the
 Applications of Accelerators in Research and Industry , 20-25
 August , 2006 Fort Worth Texas, **USA**

 2. A. Sharma,   Abstract Book 38th European Group of Atomic Systems (
Euro physics   Conference) Isachia (Naples**) Italy** (2006) 53.

3. A. Sharma , Abstract Book , A Century After Einstein Physics 2005 ,
 10-14 April 2005 (Organizer Institute of Physics , Bristol)
 University of Warwick , **ENGLAND**

 4. A. Sharma presented in 5th British gravity Conference , OXFORD
ENGLAND

5. A. Sharma,. Proc. Int. Conf. on Computational Methods in
      Sciences and Engineering 2003 World Scientific Co. **USA ,**
(2003) 585.

6. A. Sharma, Proc. Int. Conf. on Number, Time, Relativity United
      Physical Society of Russian Federation, **Moscow ,** (2004) 81
plus more

Journals

This paper
"The Origin of Generalized Mass-Energy Equation $\Delta E = Ac^2 \Delta M$; and its applications in General physics and Cosmology".
 is published in the journal,
   Physics Essays , CANADA - www.physicsessays.com

The paper
The past, present and future of $E=mc^2$ will be published in 2007 Galilean
Electrodynamics, Massachusetts, USA.
In parts it is published in various others journals.

Book   100 Years of E=mc2

For details
https://www.novapublishers.com/catalog/product_info.php?cPath=23_48_324&products_id=4554