

Re: Energy and Mass

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- *From:* srp@xxxxxxxxxxxxx
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On 11 fév, 10:21, "Jon Slaughter" <Jon_Slaugh...@xxxxxxxxxxxxx> wrote:

When one measures mass of an object does it include measuring the energy that the object contains? (Since mass and energy are "equivalent")

Yes. To obtain the energy (in joules) you only need to multiply the mass obtained by c^2 (the speed of light squared= 8.987551787E16)

Suppose I have a measure the mass of a box and then I "put" some energy in it. When I measure it will I get a different mass?

If this could be done, then yes, but for all practical purposes, the difference would be infinitesimal.

Adding energy in context means heating the box. Or setting it in motion (motion implies adding energy) which would make the increased mass hard to physically measure.

If that's the case then doesn't the bonds in an atom increase its mass more than by just using the atomic mass?

Actually, they sort of decrease slightly.

That is, say we are using carbon as our material and we measure out one mole then we would say there are Avogadro's number of atoms there. But if energy is equivalent to mass then aren't we overestimating? (because all those bonds that exist will have energy = mass but do not represent the true mass of just the atom)

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The difference borders the infinitesimal.

Ofcourse maybe the overall error is insignificant but I'm just wondering if my logic is correct?

Just about.

Thanks,
Jon

André Michaud

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