

# Physics 1214 - General Physics II

Quiz #25 - 2013.04.12

Solutions

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1. The famous equation  $E = mc^2$  is only valid under what condition?

This equation corresponds to the rest energy of an object, hence  $p = 0$  in the equation  $E = \sqrt{(mc^2)^2 + (pc)^2}$ .

2. Why must momentum be redefined for relativistic speeds?

If conservation of momentum is to be true for any and all inertial frame of reference, the definition of momentum must be modified so that this is indeed the case.