

## Re: Theoretical limit for loud music??

**Source:** <http://sci.tech-archive.net/Archive/sci.electronics.design/2004-09/0765.html>

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**From:** Guy Macon (<http://www.guymacon.com>)

**Date:** 09/04/04

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Kevin Aylward <salesEXTRACT@anasoft.co.uk> says...

>

>Guy Macon wrote:

>>SPL is a function of the

>> velocity and the mass of the medium.

>

>Yes, but technically its the momentum. Light has pressure, but no "rest mass".

I thought we were talking about air approaching lightspeed.

>> Unlike the negative limit

>> which is hard clipping at zero pressure (vacuum), approaching

>> the positive limit is a matter of pouring more and more energy

>> into attempting to accelerate the medium, only to have that

>> energy turn into mass rather than velocity at the  $E=MC^2$  rate.

>> This additional mass allows higher pressures, and can approach

>> infinity if you pump enough energy in.

>

>That's not quite how it works though. This "mass increase" bit is a bit

>of a misnomer. Mass itself, doesn't actually increase. No professional

>physicist uses the concept at all, well, accept when writing popular

>paperbacks.

News to me – but then again, I am an electronicsite, not a Physicsoid...

<http://www.google.com/search?q=physics++%22mass+increases%22>

>Shit, now I have to go and think about when what gets applied to what,

>certainly this pops up (quick search) as an example:

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><http://www.as.utexas.edu/astronomy/education/spring01/lambert/classnotes16.html>

>"The Heisenberg Uncertainty Principle also contains the seeds to setting

>a limit on how massive a white dwarf can be. Remember, nothing goes

>faster than light, so the maximum momentum of an electron is set by the

>speed of light and so there is a maximum pressure provided by degenerate