# Review of: "The Compton Wavelength Is the True Matter Wavelength, Linked to the Photon Wavelength, While the de Broglie Wavelength Is Simply a Mathematical Derivative"

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First, extraordinary claims require extraordinary proof and the author makes a rather extaordinary claim:*Viewing physics through the de Broglie wavelength is like looking at the world through a distorted lens; switch to the Compton wavelength, and the distortion is removed, allowing us to see simplicity and clarity even in complex phenomena such as quantum gravity.* However, I don't see the extraordinary proof.

First, the Rydberg constant was never (ever) linked to any sort of relativistic theory. Yes, c does appear in Eq. 12, but that's from converting from energy to $1/\lambda$. The Rydberg constant should read (c.f. Wikipedia).

$$R = \frac{e^2}{2a_o}$$

The physics for this trivial to derive from the virial theorem relating the average kinetic energy to the average potential energy, which for a $r^n$ potential reads:

$$2\langle T\rangle = n\langle V\rangle$$

So for $V(r) = -e^2/r$, and setting r to be the Bohr radius, you get the Rydberg Constant! It's that simple…basic freshman-level physics. (There's an additional $1/4\pi\epsilon_o$ on the Wikipedia page for this--the difference is I'm using Gaussian units while the Wikipedia page has SI units. Hopefully, that doesn't create a confusion as well. ) So, I would claim that the Rydberg constant IS rooted in something physical, contrary to the claims of the author and one of his citations. So, if I have to doubt this simple claim, I have to cast doubt on the rest..especially the final claim regarding gravitational calculations in which the author cites his own unpublished and probably un-reviewed preprint.

Secondly, the de Broglie wavelength has tremendous utility in semiclassical theory and statistical mechanics in which $\lambda = h/p$ appears time and time again as the measure for a quantization length. Moving to a Compton wavelength-centric scale would really add un-necessary baggage without really adding anything useful in terms of theoretical insight or computational facility.

So, in conclusion, it's refreshing to see concepts like this reanalyzed. However, I have to relegate this to more of a philosophical opinion paper than anything that would have practical utility in physics. The claims are huge but the proof isn't convincing. I'd suggest the author back-off on his more outrageous claims and perhaps try to present this more in a

historically measured context.