

## Re: The genius of the Absolute

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**From:** Jesse Mazer (vze2ztqw\_at\_mail.verizon.net)

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Franz Heymann wrote:

>"Androcles" <dummy@dummy.net> wrote in message  
>news:LduEd.94913\$48.57682@fe1.news.blueyonder.co.uk...  
>  
>[snip]  
>  
>  
>  
>>Which is logically impossible. So forget Lorentz invariance, it is  
>>sci-fi.  
>>  
>>  
>  
>I see you have never tried to see if Maxwell's equations obey Lorentz  
>or Galilean invariance.  
>Have a shot at it if you want to give yourself an unpleasant surprise.  
>

Of course, before Einstein physicists didn't think Maxwell's laws would be correct in every observer's reference frame—they thought they would only hold exactly in the rest frame of the aether. They would have believed that to state the laws of electromagnetism in a way that would hold in all frames, you'd have to replace every  $x$  in Maxwell's laws with  $(x - v*t)$ , where  $v$  represents the observer's velocity relative to the rest frame of the aether...any derivatives of  $x$  would have to be replaced in the same way, like replacing  $dx/dt$  with  $(dx/dt - v)$ . This would give a new set of electromagnetic laws which would be Galilei-invariant, and which would reduce to Maxwell's laws in the case where  $v=0$ .

But a prediction of this Galilei-invariant analogue of Maxwell's laws would be that for an observer in motion relative to the aether, light will be observed to move at different speeds in different directions, relative to himself. Unfortunately this was not supported by the Michelson-Morley experiment. Androcles proposes to explain this negative result with the suggestion that the velocity of light depends on the

velocity of the source, but this would be false according to both Maxwell's laws \*and\* the modified Galilei-invariant analogue of Maxwell's laws (which says that light waves, like sound waves, always travel at the same speed in the rest frame of the aether/air, regardless of the velocity of their source). So unless he can find a theory that gives correct predictions for all the various experiments in classical electromagnetism, and yet does not have the feature that the velocity of light is independent of the source velocity, then his ideas wouldn't even have seemed plausible to a physicist in a time before the theory of relativity had been published (but after the Michelson–Morley experiment had been done).

Jesse