

## Re: SR and GR without math

**Source:** <http://sci.tech-archive.net/Archive/sci.physics.relativity/2004-10/0239.html>

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**From:** Paul Bramscher (*brams006\_nospam\_at\_tc.umn.edu*)

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Date: Thu, 30 Sep 2004 16:32:07 -0500

Dirk Van de moortel wrote:

> "Paul Bramscher" <*brams006\_nospam@tc.umn.edu*> wrote in message  
news:*cjhs53\$8e9\$1@lenny.tc.umn.edu*...

>

>>Tom Roberts wrote:

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>>>Paul Bramscher wrote:

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>>>>I've got a question regarding relativity: is there any way to state

>>>>SR, GR, or QM fully without mathematics?

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>>>>"fully"? -- no. Approximately, yes. As others have pointed out.

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>>>>>I ask because of the curious problem I've encountered with Karl

>>>>>Popper and the claim that a scientific statement is one which is

>>>>>falsifiable.

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>>>>>

>>>>>Right. But you don't seem to understand what he meant by "falsifiable".

>>>>>A theory is falsifiable if and only if it is possible to construct an

>>>>>experiment which could measure a value in disagreement with the theory.

>>>>>So, for instance, the theory "God created everything just as we see it"

>>>>>is not falsifiable, because it is not possible to make an observation

>>>>>that would disprove it.

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>>>>>>But the problem with any mathematical tautology is that it is *\*not\**

>>>>>>falsifiable,

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>>>>>>>Sure. Mathematics is not physics. Well known, and not a problem.

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>>>>*not due to empirical/experimental evidence to the contrary, but  
>>>>because math can be proven to be inherently correct beyond the realm  
>>>> of the empirical.*

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>>>*Sure. Mathematics is not physics. So what?*

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>>*You completely misunderstand my point. Given that math is not physics,  
>>I asked whether SR & GR can be expressed without math. If not, then  
>>perhaps you cannot so easily disentangle the two. At that point one is  
>>led to believe whether SR & GR are in large part non-science.*

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>>*I don't necessarily agree with this.*

>>

>>*But you missed my point. You say math isn't physics. Then show me the  
>>physics without math.*

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>>*I view math, logic, set theory, etc. as methodological tools of science,  
>> as important as lab work, observation, experiment, etc. But they are  
>>tools of methodology, and should not become totally inseparable from the  
>>knowledge they purport to grant. And, such, I ask again -- if math  
>>isn't physics, what remains of SR & GR?*

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> *Why do you focus on SR and GR?*

Because it's currently the dominant set of theories, and nearly totally mathematics.

> *What remains of classical Newtonian Mechanics?*

Not much -- and it proved to be wrong on empirical (not mathematical) basis. Good case in point.

> *I'll ask again: can you express the proportionality between*

> *force and acceleration without mathematics?*

> *Can you express acceleration without mathematics?*

I'm not asking for that. I'm asking what remains when you reduce the math out. I'm not arguing that it's a bona fide theory, or in any way synonymous with the theory. I'm only arguing that what remains is what's most exposed to empirical falsifiability. Indeed, it's the only thing that ultimately remains to falsification.