Re: Continuum hypothesis

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- *From*: stevendaryl3016@xxxxxxxxx (Daryl McCullough)
- *Date*: 20 Aug 2007 13:28:53 −0700

Alan Smaill says...

> george <greeneg@xxxxxxxxxx> writes:
>
>> On Aug 20, 11:39 am, stevendaryl3...@xxxxxxxxx (Daryl McCullough)
>> wrote:
>>
>>> Bell's Theorem proves that no measurable function f can
>>> possible
>>> satisfy this constraint. However, Pitowsky proved that if one
>>> assumes the continuum hypothesis, one can construct a
>>> nonmeasurable
>>> function that satisfies this constraint.
>>
>> One line of the truth table still has not been completed here.
>> If one DENIES the continuum hypothesis, can there still
>> exist a NON−constructible nonmeasurable function that
>> satisfies the constraint? Or is the truth of the CH necessary
>> to the existence of the non−measurable function at all (regardless
>> of whether it can be proven to exist)?
>
> Since the proof given uses Martin's Axiom and not the stronger CH,
> and ZF+MA is consistent with not AC (assuming ZF consistent,
> presumably), the existence of such functions is consistent
> with not CH.

As I understand Pitowsky's construction, what is needed for the
construction to go through is something along the lines of this axiom:

A: There exists a well−ordering < of the reals such that for every
real x, the set of all y < x has Lebesgue measure 0.

The continuum hypothesis of course implies this (because if
you well−order the reals with order type omega−1, then the

set of all y < x will always be a countable set, which always
has Lebesgue measure zero). But my axiom A doesn't imply the
continuum hypothesis.

−−

Daryl McCullough
Ithaca, NY

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