Re: bijection of R: R <−−> Rx.....xR

Source: http://sci.tech−archive.net/Archive/sci.math/2005−09/msg01954.html

- *From*: "Timothy Golden http://www.BandTechnology.com" <tttpppggg@xxxxxxxxx>
- *Date*: 8 Sep 2005 13:50:59 −0700

David C. Ullrich wrote:
> On 8 Sep 2005 10:22:24 −0700, "Timothy Golden
> http://www.BandTechnology.com <tttpppggg@xxxxxxxxx> wrote:
>
> >
> >David C. Ullrich wrote:
> >> On 7 Sep 2005 10:21:28 −0700, "Timothy Golden
> >> http://www.BandTechnology.com <tttpppggg@xxxxxxxxx> wrote:
> >>
> >> >Does anyone reject this method on philosophical grounds?
> >> >The digits are merely a representation of a real number,
> >> >not the real number itself. A value (a) and (b) in the reals
> >> >would seem more valid, and a function defined mathematically:
> >> > c = f (a, b).
> >>
> >> First, it seem like _you_ are wrongly rejecting something
> >> on philosophical grounds: Although it turns out it doesn't
> >> quite solve the problem, if it did solve the problem there
> >> would be nothing wrong with defining a function f(a,b) in
> >> terms of the decimal digits.
> >>
> >> >This thing you guys are doing is sort of a three tape Turing solution.
> >> >Yes it works but where is the purity?
> >> >How about a swirl where
> >> > t = c
> >> > r = c d
> >> >where t is theta and r is radius.
> >> >now a = r cos t
> >> >and b = r sin t
> >> >Within a delta related to d there will be a range of c that matches for
> >> >any a and b.
> >> >If more accuracy is needed then drop d.
> >>
> >> First, I don't follow your definition at all. But more important,
> >> it seems clear that you're _not_ defining a function! You say do
> >> this, then you get a _range_ of c, if more accuracy is required
> >> do something else...
> >That is the epsilon−delta method of thinking isn't it? This is at the

> >foundation of real analysis.
>
> Uh, thanks. I understand real analysis very well. The formulas
> above do not define a bijection from the plane to the line,
> or in the other direction.
>
> Something that has a range coming close to every point in a set
> is not a mapping _onto_ that set. Saying "this is the epsilon−delta
> method of thinking" does not change that fact.
>
> >When you prove that for any range delta
> >you can choose an epsilon that suffices you have proven the general
> >situation. However small you want the error that sets d in the swirl
> >construction above. Choosing d = 1 gets a swirl emanating from the
> >origin passing through 1,2,3,... on the complex plane. Based on a
> >single unsigned continuous value two real values can be generated(with
> >error). It is the simplest space filling curve.
>
> A spiral is not a space−filling curve at all.

Most of the space filling curves that I have seen fill a box of finite
measure.
This one carries out to infinity so ought to be granted similar status
as one which accomodates a box with zero error.

−Tim

> And in fact it's very easy to see that a bijection from
> R to RxR _cannot_ be continuous. So those formulas above
> can't possibly be right.
>
> >Whether the approach
> >can be generalized to three real values(3D) I'm not sure.
> >>
> >> To define a function f(a,b) you need to say exactly what f(a,b)
> >> _is_ (which the definition in terms of digits does!), not what
> >> it might be, or what it is approximately.
> >>
> >> >Does this approach work for 3D?
> >> >I don't see it.
> >> >
> >> >−Tim

> >>
> >>
> >> ************************
> >>
> >> David C. Ullrich
> >
>
>

> David C. Ullrich

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- ***Follow−Ups***:
    - ***Re: bijection of R: R <−−> Rx.....xR***
        - *From:* David C . Ullrich

- ***References***:
    - ***bijection of R: R <−−> Rx.....xR***
        - *From:* Timothy Golden http://www.BandTechnology.com
    - ***Re: bijection of R: R <−−> Rx.....xR***
        - *From:* Peter Webb
    - ***Re: bijection of R: R <−−> Rx.....xR***
        - *From:* David C . Ullrich
    - ***Re: bijection of R: R <−−> Rx.....xR***
        - *From:* Timothy Golden http://www.BandTechnology.com
    - ***Re: bijection of R: R <−−> Rx.....xR***
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        - *From:* Timothy Golden http://www.BandTechnology.com
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        - *From:* David C. Ullrich

- Prev by Date: ***Re: infinity***
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