Re: circle homeomorphism

Source: http://sci.tech−archive.net/Archive/sci.math/2005−10/msg02068.html

- *From*: David C. Ullrich <ullrich@xxxxxxxxxxxxxxxx>
- *Date*: Wed, 19 Oct 2005 06:13:08 −0500

On Tue, 18 Oct 2005 20:33:05 +0100, "Thomas Novascott"
<Thomas.novascott@xxxxxxxxxxxxxxxxxx> wrote:

>
>"David C. Ullrich" <ullrich@xxxxxxxxxxxxxxxx> wrote in message
>news:8ul7l1p6ljvhud9v55hubqsl8t7o3qq47f@xxxxxxxxxx
>> On Sun, 16 Oct 2005 20:53:50 +0100, "Thomas Novascott"
>> <Thomas.novascott@xxxxxxxxxxxxxxxxxx> wrote:
>>
>>>
>>>"David C. Ullrich" <ullrich@xxxxxxxxxxxxxxxx> wrote in message
>>>news:ft65l1tc7gd90vvjt159t7a12ebo5fi7ea@xxxxxxxxxx
>>>> On Sun, 16 Oct 2005 11:46:21 +0100, "Thomas Novascott"
>>>> <Thomas.novascott@xxxxxxxxxxxxxxxxxx> wrote:
>>>>
>>>>>> It seems we have an increasing homeomorphism F of R,
>>>>>> with period 2\pi, such that
>>>>>>
>>>>>> f(eit(t)) = eit(F(t))
>>>>>>
>>>>>> (writing eit(t) = exp(2 Pi i t)); F is a "lift"
>>>>>> of f (ie a lifting of f to R wrt the covering
>>>>>> map eit:R −> S^1.)
>>>>>>
>>>>>> and the rotation number is the limit of
>>>>>>
>>>>>> (*) (F^n(t) − t)/n,
>>>>>>
>>>>>> (where F^n denotes iterated composition).
>>>>>>
>>>>>> It follows that
>>>>>>
>>>>>> eit(F(F(t)) = f(eit(F(t)) = f(f(eit(t));
>>>>>>
>>>>>> that is, F^2 is a lift of f^2. If we're willing
>>>>>> to believe that the limit (*) exists the result
>>>>>> you ask about follows easily...
>>>Thank you for your indepth explanation,
>>>i think i should have made it clearer, but i dont see how

>>>eit(F(F(t)) = f(eit(F(t)) = f(f(eit(t));
>>>
>>>proves p(f^n)=n.p(f)
>>>(sorry for not making this clearer)
>>
>> It proves it for n = 2. Since F^2 is a lift
>> of f^2 it follows that
>>
>> p(f^2) = lim ((F^2)^n(t) − t)/n
>>
>> = lim (F^(2n)(t) − t)/n
>>
>> = 2 lim (F^(2n)(t) − t)/(2n)
>>
>> = 2 lim (F^n(t) − t)/n,
>>
>> where the last equality is because if a sequence
>> convergese then any subsequence converges to the
>> same limit.
>>
>seems i forgot the last statement! i see this proof would work for n > 0 and
>n=0 is obvious, out of curiousity could i use this approach to try and solve
>n <0 ?

I've already posted a proof for n = −1 in this thread.

(That proof depended on the uniform convergence of that limit,
which I had not proved at that point, but which I have
proved since then. In this thread.))

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David C. Ullrich
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- ***References***:
    - ***circle homeomorphism***
        - ◊ *From:* Dumdum project
    - ***Re: circle homeomorphism***
        - ◊ *From:* David C . Ullrich
    - ***Re: circle homeomorphism***
        - ◊ *From:* David C . Ullrich
    - ***Re: circle homeomorphism***
        - ◊ *From:* Thomas Novascott
    - ***Re: circle homeomorphism***
        - ◊ *From:* David C . Ullrich
    - ***Re: circle homeomorphism***
        - ◊ *From:* Thomas Novascott

- Prev by Date: ***Re: Is there any body know the definition of normal tree in graph theory?***
- Next by Date: ***Re: Sum of periodic functions with incommensurate periods***
- Previous by thread: ***Re: circle homeomorphism***
- Next by thread: ***Re: Fourier transform and the like***
- Index(es):
    - ***Date***
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