Re: Douady−Hubbard Potential

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- *From*: Roger Bagula <rlbagulatftn@xxxxxxxxx>
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He's using co−variant or Hermetian
differential operators.
D=> d/dx+I*d/dy
Dbar−> d/dx−I*d/dy
His metric is then:
D*Dbar=d^2/dx^2+d^2/dy^2=d^2/dz^2
The Laplacian law (harmonics) is:
d^2f/dz^2=0
Essentially he states that the potential is
perpendicular as a "field" to the the radial
Kinetic of the Mandelbrot set.
That the Mandelbrot set is behaving as a fractal drum
is another way of saying this.
The point is that when we put that math to work on the set it does gives the tangential curves that such a theory would predict.
I called this "fractal field theory" about 1991 or 2 in TFTN.
This kind of theory only works because the border set of the Mandelbrot set is two dimensional or topological in dimensional measure, but
in general we seem to be seeing to components to the fractal field
and they are generally perpendicular to each other.
This idea gets very strange when the one of them is of fractal dimension instead of topological dimension.
Try deriving a set perpendicular to a Cantor set for instance.
x'=x/3
x'=x/3+2/3
You have the two products:
x'dot y'=Abs[x']^2+Abs[y']^2−2*Abs[x']*Abs[y']*cos[theta]=1
(cosine law)
x' cross y'=Abs[x']*Abs[y']−Abs[y']*Abs[x']=0

Abs[y']^2−2*Abs[x']*Abs[y']*cos[theta]−1+Abs[x']^2=0
Solving for Abs[y'] gives:
Abs[y']=(2*Abs[x']+/−Sqrt[4*Abs[x]^2−4*(−1+Abs[x]^2)])/2
Abs[y']=Abs[x']+/−1
y'=x'−1
y'=x'+1
Four cases result
y'=x/3−1
y'=x/3+1
y'=x/3−1/3

y'=x/3+4/3
You are welcome to try that !
The Moran similarity dimension is
4/3^s=1
log[4]−s*log[3]=0
s=Log[4]/Log[3]
That a von Koch set by dimension (but overlapping in one dimension)
That is a fractal set in one dimension has implied a fractal set in two dimensions.
If you add the two fractal dimensions
Log[2]/Log[3]+Log[4]/Log[3]=3*Log[2]/Log[3]=Log[2]/Log[3]=1.89279
−−>not 2
That is different than:
2−Log[2]/Log[3]=(2*Log[3]−Log[2])/Log[3]−−>1.36907
not−>1.26186
Solve[Log[2]/Log[3] + x*Log[4]/Log[3] − 2 == 0, x]
x=(2*Log[3]−Log[2])/Log[4]=1.08496
which is very close to Log[3]=1.09861
The fractal field has a topological dimensional deposit (it comes up short of a space filling curve.)
Dr. Mandelbrot says that there are two ways we can look at low dimensions H:
D=1/H (trail)
D=2−H (local box)
This kind of resolves the problem.
If you think of a Cantor set and a Not Cantor set
as both being one dimensional then:
1/s=Log[2]/Log[3]
Dcantor1+Dcantor2=2*Log[2]/Log[3]=Log[4]/Log[3]>1
They overlap on the line.
So fractal fields in fractal dimension are sloppy...
No one has resolved this as far as I know.
Adam Majewski wrote:

> Hi
> In the page:
> http://linas.org/art−gallery/escape/ray.html
> Linas wrote:
> "The Douady−Hubbard potential is just
>
> f = e^(−m log2) = 2^(−m)
> ...
> Lets define the derivative w.r.t a complex variable c=x+iy in the usual fashion:
>
> D = d/dc = (d/dx − id/dy)/2
>
> "
>
> I don't understand it.
> Does it mean
> D:=df/dc
> ?

Adam Majewski

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