
Subject: Re: The Logistic Map

Posted by [andy](#) on Fri, 04 Mar 1994 15:48:12 GMT

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In article <1994Mar3.160025.29736@rockyd.rockefeller.edu>, darren@sticky.rockefeller.edu (Darren Orbach) writes:

> Keywords:

>

> Greetings.

> I am trying to plot out the evolution of the logistic equation,

> iterating $x(i+1)=r*x(i)(1-x(i))$, for r in $[0,4)$. I'd like IDL to plot a

> point for each value through the iteration. The problems are that I keep

> getting floating underflows, and I can't generate the right results. The

> code is just this simple bit:

>

> Function Map, r, x

>

> return, $r*x*(1.0-x)$

>

> END

>

>

> Pro Logistic

>

> y = intarr(100) & y(*) = 0

> plot, y, xrange = [0, 4], yrange = [0, 1]

> for i = 0, 799 do begin

> r = i/200.0

> x = 0.5

> for j = 0, 299 do begin

> x = Map(r,x)

> endfor ; to get rid of transients

> for j = 0, 1999 do begin

> x = Map(r,x)

> k = fix(x * 600) ; plot the nearest integer

> ; to x*600

> plots, r, k

> endfor

>

> END

>

>

> In addition to this particular example, is there a much more optimal way of

> doing recursive calculations in IDL about which I'm simply not aware?

> Thanks in advance.

> -Darren Orbach

Darren,

I am not terribly familiar with the logistic equation (I believe it's a population estimator which often goes chaotic), but I can see that by allowing r to be so small, your value of x in the first j -loop (0, 299) is going to get very small. This is probably the source of your underflow error. A print statement in that loop would verify this.

Andy

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