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:

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>  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
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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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